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TEXTILE
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SEPTEMBER 20, 1948
VOLUME 37, No. 19

AMERICAN DYESTUFF REPORTER

OFFICIAL PUBLICATION
of the
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OF TEXTILE CHEMISTS
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American Cyanamid Company

Industrial Chemicals Division

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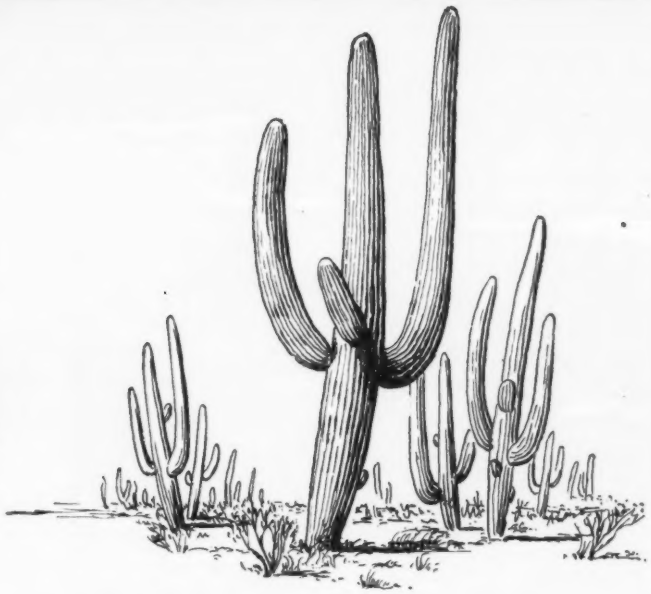

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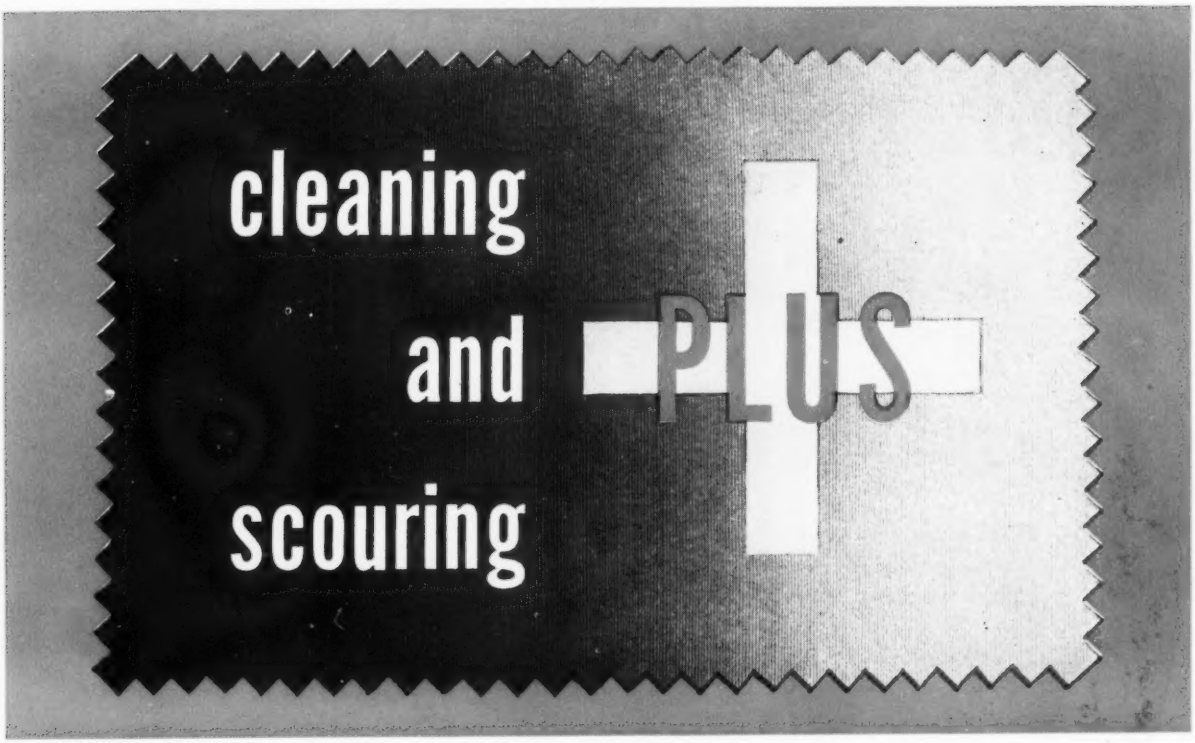

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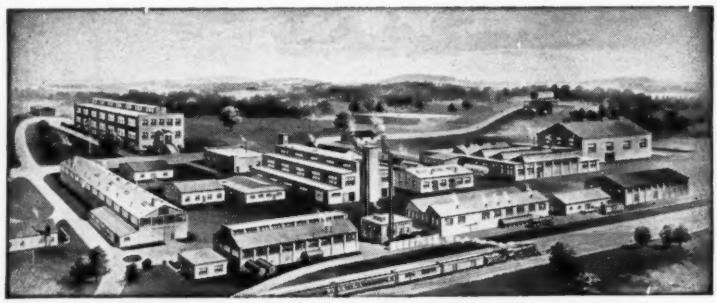

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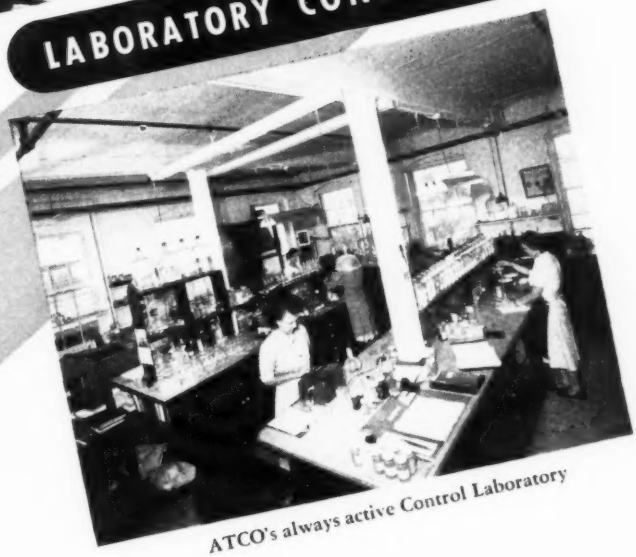

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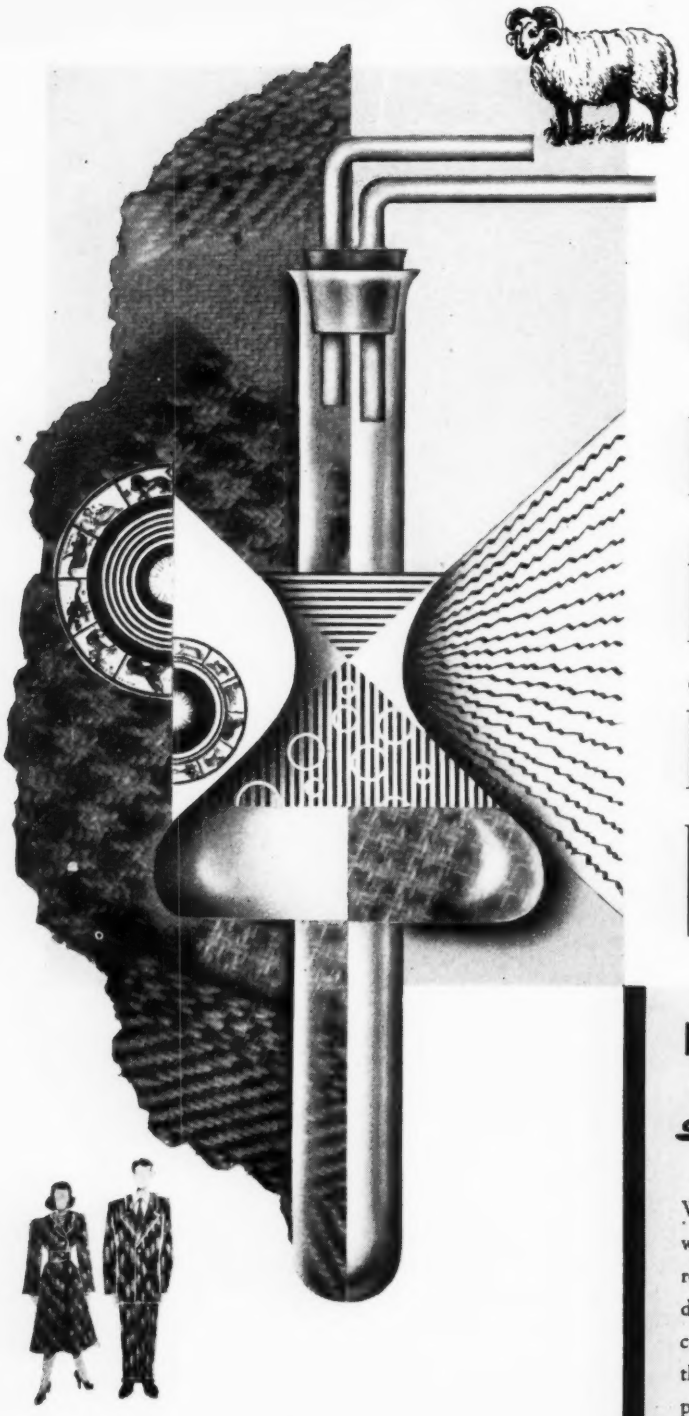

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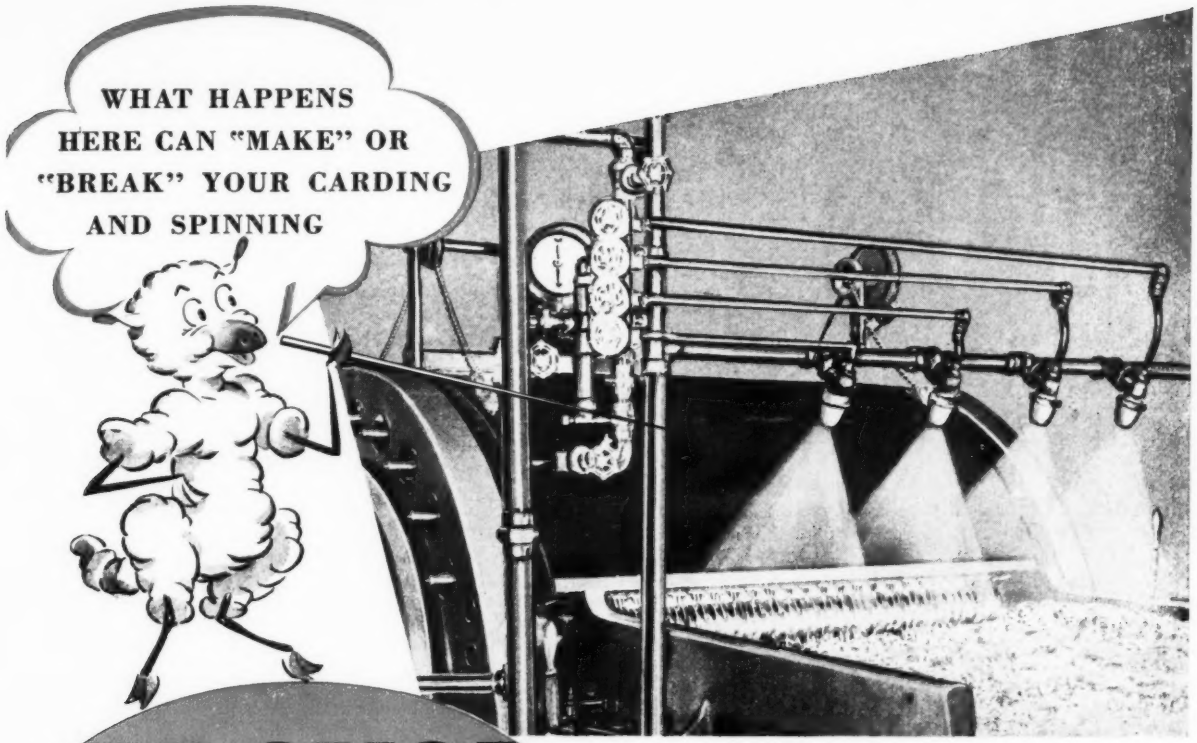

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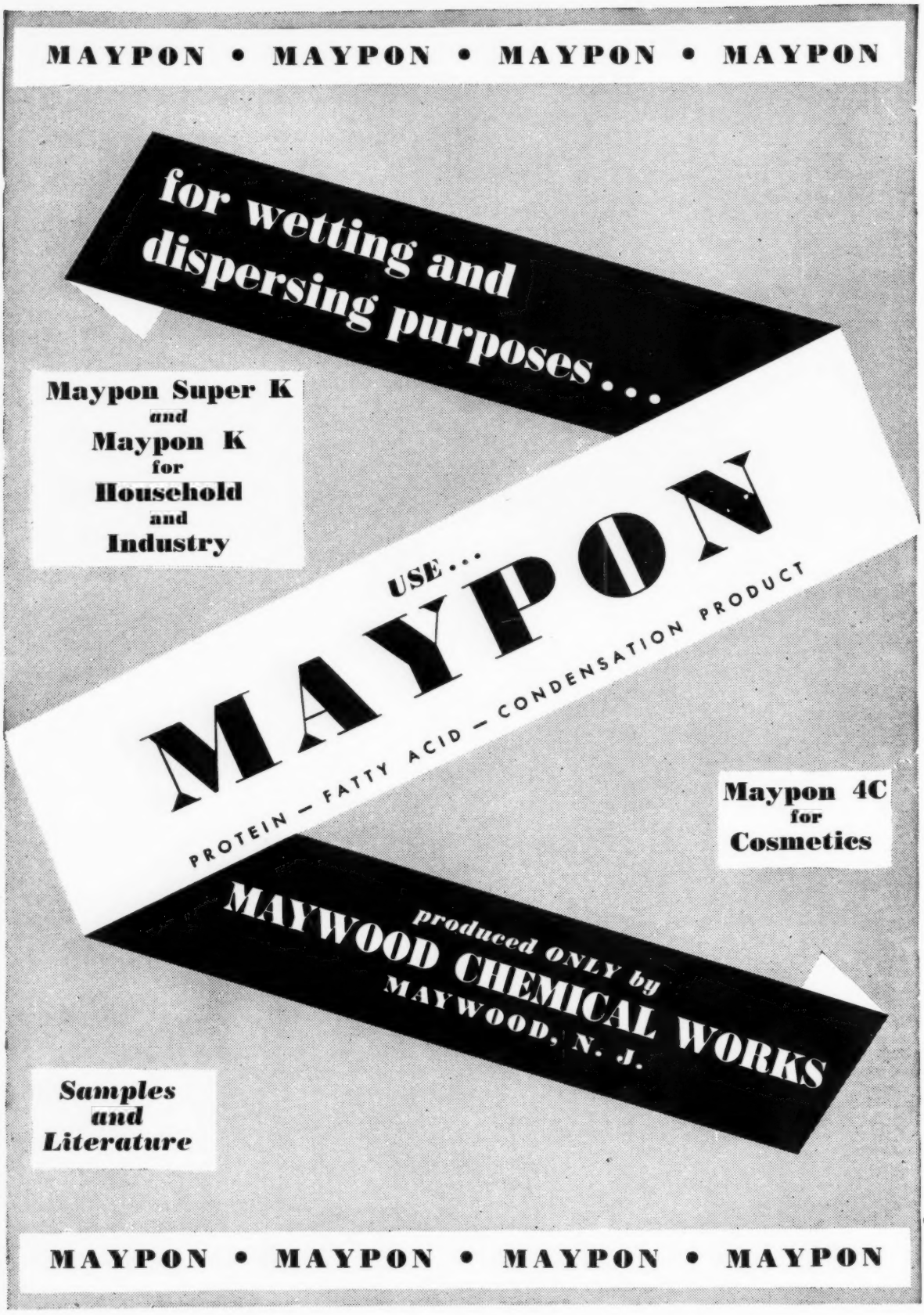
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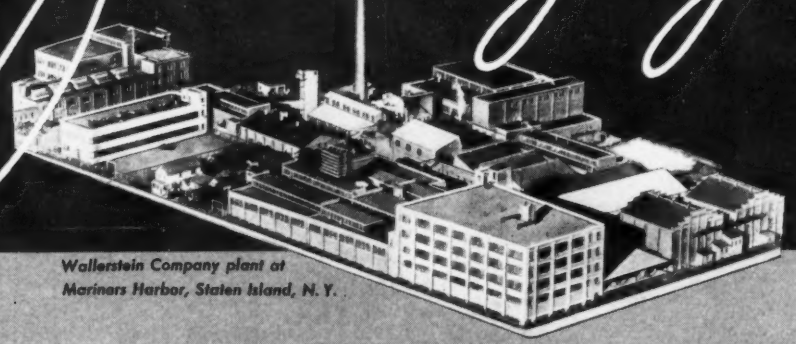

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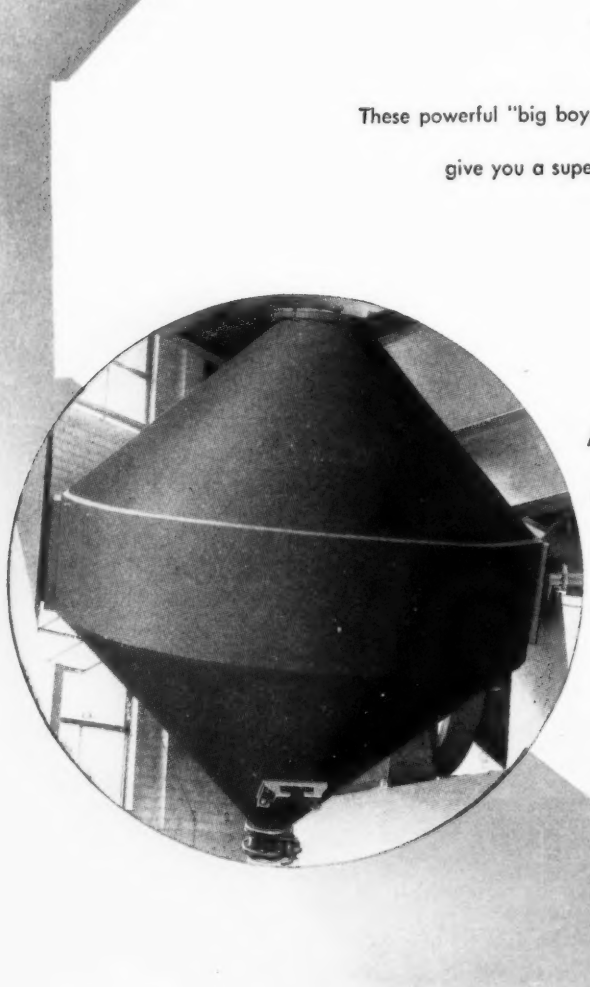

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VOLUME 37 SEPTEMBER 20, 1948 NUMBER 19

The Use of Acceptance Testing Data
to Substantiate Specification Requirements*

STANLEY BACKER
Head, Textile Materials Engineering Laboratory
Philadelphia Quartermaster Depot

THE function of the Philadelphia Quartermaster Depot textile laboratory in acceptance testing is well known to the textile industry in connection with heavy wartime procurements. For a long time this laboratory served as a traffic light in controlling the flow of materials to Quartermaster warehouses, approving shipments which met the exacting requirements of material specifications and rejecting lots which failed to possess the minimum levels in physical and chemical characteristics deemed essential for proper field performance.

In the latter part of 1944, the volume of procurements increased to the extent that these laboratory facilities, considered by many as the most complete in the country for acceptance testing of textiles, were proved inadequate to control the quality levels of wartime cloth purchases.

To utilize available laboratory data in the most efficient manner possible, statistical procedures were applied in analyzing the test reports. The quality-control techniques developed from Shewhart's original work and standardized by such organizations as the American Society for Testing Materials and the American Standards Association were substituted† for the formal accounting system of prewar days to reduce in so far as was possible the danger inherent in acceptance or rejection of manufacturers' lots on the basis of inadequate sampling. Inspectors charged with evaluation of lot quality were aided in this manner by possessing, in easily ascertainable, graphic form, a record of average quality level and variability of the production of each contractor. Trends in quality levels over an extended period of time became evident at once and led to immediate requests by contracting officers for changes in manufacturing methods where deemed necessary to improve production standards.

Presentation of comparative data of competing plants, suitably coded, spurred the feeling of pride in product quality and the patriotic conscience of certain plant officials and resulted in prompt adjustments of manufacturing techniques in the direction of an improved end product without the need for contractual penalties. In many cases mill executives were afforded the first concrete evidence of their quality level in form of the graphic compilations drawn up in the Philadelphia laboratory, and seized the opportunity to impress on production supervisors the importance of complying with the technical requirements listed in government specifications.

The general uses of the ASA quality-control chart procedures at Philadelphia are too numerous to be cited at present and may well be the subject of a separate paper. It is sufficient to say that they served as a valuable tool in making greatest use of acceptance testing data. In addition, their utilization in controlling test-method variability in research and development experimentation has become standard lab-

Foreword

During World War II the Quartermaster Corps encountered serious difficulties in the maintenance of high quality levels in its procurement of military clothing and equipage. Critical supply situations, unprecedented production schedules, and crippling labor shortages all cotributed to the creation of a difficult problem with respect to the meeting of specification standards. As the war progressed, it became evident that the capacity of the Army's inspection laboratory at Philadelphia was too limited to handle the volume of testing necessary to ensure that military requirements were satisfied by the accepted items. The Inspection Service of the Quartermaster Corps therefore initiated a plant testing program which vastly multiplied the facilities available for control testing. Under this plan the acceptance laboratory at Philadelphia assumed the character of a standards laboratory.

At this time it was recognized that the control data available at Philadelphia formed a valuable basis for review of current specifications. The technique of analyzing these data and using them as a basis for revision of existing specification limits for physical and chemical properties of military textile materials is discussed in this report.

S. J. KENNEDY, Chief
Textile and Leather Products Section

* Textile Series, Report No. 34, Office of the Quartermaster General, Military Planning Division, Research and Development Branch. Released for Public Information by the Office of the Publication Board, U. S. Department of Commerce. Since this report refers to work conducted during the war it does not reflect the present conditions of operation of the acceptance testing laboratory at the Philadelphia Quartermaster Depot.

† Recognition of the value of statistical techniques in the Philadelphia laboratory is due to the extensive training program for laboratory personnel initiated by Lt. Col. Frank M. Steadman, Director of Research and Development, Philadelphia Quartermaster Depot, and to the complete support which he afforded their use.

oratory procedure at the Philadelphia Depot. Nevertheless, it must be remembered that their primary intent is to control the quality of manufacturing output. Through the use of standardized statistical procedures they are intended to give indications of engineering defects in operator techniques, materials, or machines, before the occurrence of considerable product, personnel or plant damage. This goal has not been realized by the acceptance testing laboratory at Philadelphia because (1) sampling has been inadequate to permit accumulation of the data necessary in establishing control limits, (2) identification of test samples was insufficient to permit corrective plant action even if sufficient data were available to justify such a move, (3) conditions of production (scarcity of raw materials and resulting substitutions) and the time lag between availability of laboratory information and actual manufacture often created a situation whereby the data, because of changed conditions, no longer bore any engineering relationship to current production techniques.

An example of the conditions existing can be cited in the use in acceptance testing of five breaking-strength tests taken from a single specimen which resulted in a narrower range and therefore closer control limits than would have been the case if the average of single breaks taken from five different specimens within a manufacturing lot had been used. Under such conditions, few manufacturers were shown to be in statistical control. On the other hand, grouping the averages of five individual breaking-strength values to form a single point on the graph representing, for example, the average of twenty or twenty-five individual breaks, extended the time necessary to accumulate basic data for setting initial control limits to such an extent that the information was meaningless in relation to manufacturing schedules. To correct deficiencies of this sort, would require expansion of government laboratory facilities and personnel, vastly increased sampling, and modified sampling procedures at the manufacturers' plant.

The corrective action taken by the Inspection Service of the Office of The Quartermaster General involved conversion of the acceptance-testing procedure to the plant-testing plan in which the laboratories of all mills were used to expand the available effective testing facilities beyond the stage possible in a single government laboratory. Simultaneously, the sampling was increased and an improved technique of gathering and utilizing inspection data was instituted under the Sequential Analysis Plan. Under this general procedure the Philadelphia Depot served as a standards laboratory or check on plant testing. Samples were submitted for analysis at planned intervals and the reports of government tests were compared by the Inspection Service with data submitted from the plant on each manufacturing lot. The larger sample tested in the mill now served as the basis for acceptance or rejection of production, while the Philadelphia data merely provided control on plant testing.

Acceptance Testing Data as an Aid to Improved Specifications

Even as the laboratory at the Philadelphia Depot assumed a second-line position in the control of the product quality of those mills possessing sufficient laboratory facilities to qualify under the plant testing program, the worth of its acceptance reports was recognized by research and development technologists. Here was a valuable source of information for determining the validity of specification limits from the standpoint of full-scale production. Under the pressure of wartime procurements, technologists were often forced to base material requirements on insufficient samples which, in many instances, were hardly representative of full-scale manufacturing conditions. The data obtained from initial procurements served as the testing ground for specifications and led to the raising or lowering of standards to conform to that which was available on full-scale production. It was obvious that "too few of the best" did not equip an army.

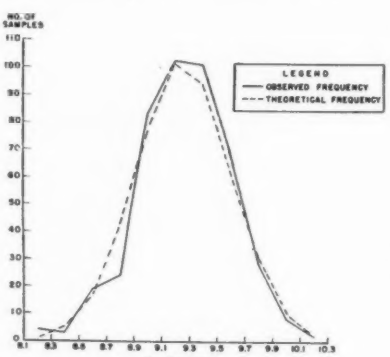
The data available for evaluation of quality levels and validity of specifications were too extensive to permit efficient study in their original form and, therefore, it was deemed advisable to summarize them as frequency distribution curves. The values for each fabric property were grouped in arbitrarily chosen class intervals and the frequency at each of these intervals was determined. Using this grouping the average value of the given property was computed as well as the standard deviation of all specimens about the average. The observed frequency distribution of test values was used as a basis for determining expected frequencies and thus provide a theoretical frequency curve which, without the irregularities of the original data, indicates what parameters might be expected if the properties of all the fabric deliveries made to the Army had been determined.

As an illustration, both the recorded distribution of fabric weight per square yard of 9-oz. sateen and the theoretical distribution are plotted in Figure 1 to show how the observed frequencies deviate from the distribution expected for the entire yardage delivered to the depot. In Figure 2, the theoretical frequencies are again plotted and a smooth symmetrical curve drawn through the plotted points.

The data for four fabrics which have been purchased in great quantities during the war are presented below to illustrate the distribution of their properties relative to specification limits. The fabrics selected for study, 9-oz. Sateen, 5-oz. Poplin, 8.5-oz. Herringbone Twill, and 20-oz. Wool Meltona are listed in Table I together with the specification limits applicable during June and July 1944, when these data were selected for the first three types, and February to April 1945, for the Wool Melton. Of the four the herringbone twill and melton were not treated for water repellency and therefore were not tested for air permeability, hydrostatic resistance and spray ratings. Frequency distribution curves were not plotted for the herringbone twill.

The properties listed in Table I were tested in accordance with the methods described in two textile test method manuals, Federal Specification CCC-T-191a and QMC Tentative Specification PQD 447 (later issued as USA Specification 100-48 and finally as a supplement to CCC-T-191a). The "grab" method was used in testing breaking strength. Shrinkage was determined after one cotton laundering at 210° F. for 60 minutes, Air permeability was measured with the "Gurley Densometer." The Suter machine was used in determining hydrostatic resistance. The values recorded in the laboratory were the averages of three measurements made of each characteristic of individual fabric specimens.

Tests were conducted at room conditions with temperatures approximating the 70° F. to 80° F. limits of the Federal Specification, but with relative humidities well under the 65% level. The fact that a government laboratory would test at nonstandard conditions may be startling to the uninitiated reader but the reasons



Type I)

Comparison of Observed Frequency of Fabric (Cloth, Cotton, Wind-Resistant, Sateen, 9 Oz., Type I,) Weights with Theoretical Frequency

TABLE I

Specification Requirements for Four Army Uniform Fabrics

Property	Unit	Specification Limits			
		Sateen	Poplin	HBT	Melton
		Spec. PQD 245D	Spec. USA No. 6-321A	Spec. USA No. 6-261	Spec. USA 8S-39A
Weight	oz/sq. yd.	9.0 min.	5.0 min.	8.5 min.	19 min.
Texture					
Warp	ends/in	112 min.	106 min.	72 min.	46 min.
Filling	picks/in	68 min.	52 min.	46 min.	44 min.
Breaking Strength					
Warp	lbs.	150 min.	116 min.	125 min.	70 mins.
Filling	lbs.	125 min.	60 min.	85 min.	60 mins.
Shrinkage					
Warp	%	1 max.	2 max.	1 max.	....
Filling	%	2 max.	2 max.	1 max.	....
Air Permeability	sec.	100 min.	70 min.	....	....
Hydrostatic Resistance					
Original	cm.	40 min.	30 min.	....	....
After 3 launderings	cm.	25 min.	20 min.	....	....
After 3 dry cleanings	cm.	30 min.	20 min.	....	....
Spray Rating					
Original	....	90 min.	90 min.	....	....
After 3 launderings	....	70 min.	70 min.	....	....
After 3 dry cleanings	....	60 min.	70 min.	....	....

TABLE II

Average Quality Level of Cloth, Cotton, Sateen, Wind Resistant Delivered at PQMD During June and July 1944

Contractor	*Approx. Number of Samples Observed	Weight	Texture		Strength		**Shrinkage		Air Permeability	Spray			Hyro		
		Ozs.	Warp Ends Per In.	Filling Picks Per In.	Warp Lbs.	Filling Lbs.	Warp %	Filling %	Gurley Sec.	Orig	3rd Wash	3rd D. C.	Orig cm	3rd Wash cm	3rd D. C. cm
		(Spec. 9.0 Min.)	(Spec. 112 Min.)	(Spec. 68 Min.)	(Spec. 150 Min.)	(Spec. 125 Min.)	(Spec. 1 Max.)	(Spec.) 2. Max.)	(Spec. 100 Min. 300 cc. per .1 Sq. In.)	(Spec. 90 Min.)	(Spec. 70 Min.)	(Spec. 70 Min.)	(Spec. 40 Min.)	(Spec. 25 Min.)	(Spec. 30 Min.)
A	20	8.80***	111.8***	68.6	146.3***	127.6	1.24***	.36	123.3	100.	74.1	75.8	40.6	33.8	41.4
B	12	9.12	114.0	68.3	147.1***	136.1	.24	.63	152.9	99.	80.4	74.2	42.1	31.9	42.4
C	74	9.08	115.	69.0	162.1	146.5	.14	1.23	116.5	97.8	78.4	72.7	38.6***	33.6	43.2
D	18	8.97***	113.2	68.2	149. ***	134.3	1.49***	.99	125.2	100.	73.5	80.7	39.9***	31.1	44.9
E	23	9.46	115.7	69.6	139.7***	128.9	-.55	.30	124.6	100.	78.7	80.	41.3	35.7	46.4
F	23	9.40	115.6	69.3	145.4***	138.8	-.82	.49	111.5	100.	76.8	80.4	38.8***	36.8	46.8
G	35	9.02	112.5	68.6	146.5***	132.0	.82	.13	134.4	98.2	77.8	79.6	42.6	33.5	45.7
H	150	9.19	114.5	70.4	157.7	143.4	.23	.78	124.3	96.8	76.7	74.6	38.8***	31.1	39.2
I	145	9.22	112.4	69.5	145.6***	130.6	.32	.19	119.5	93.3	78.8	73.6	41.0	34.2	42.5
J	48	9.45	115.4	68.8	160.3	139.8	.10	.73	151.1	99.3	77.6	72.6	33.8***	28.9	37.6
K	11	9.15	112.	69.5	156.	134.	.68	.09	129.5	100.	80.0	80.0	43.4	42.3	47.2

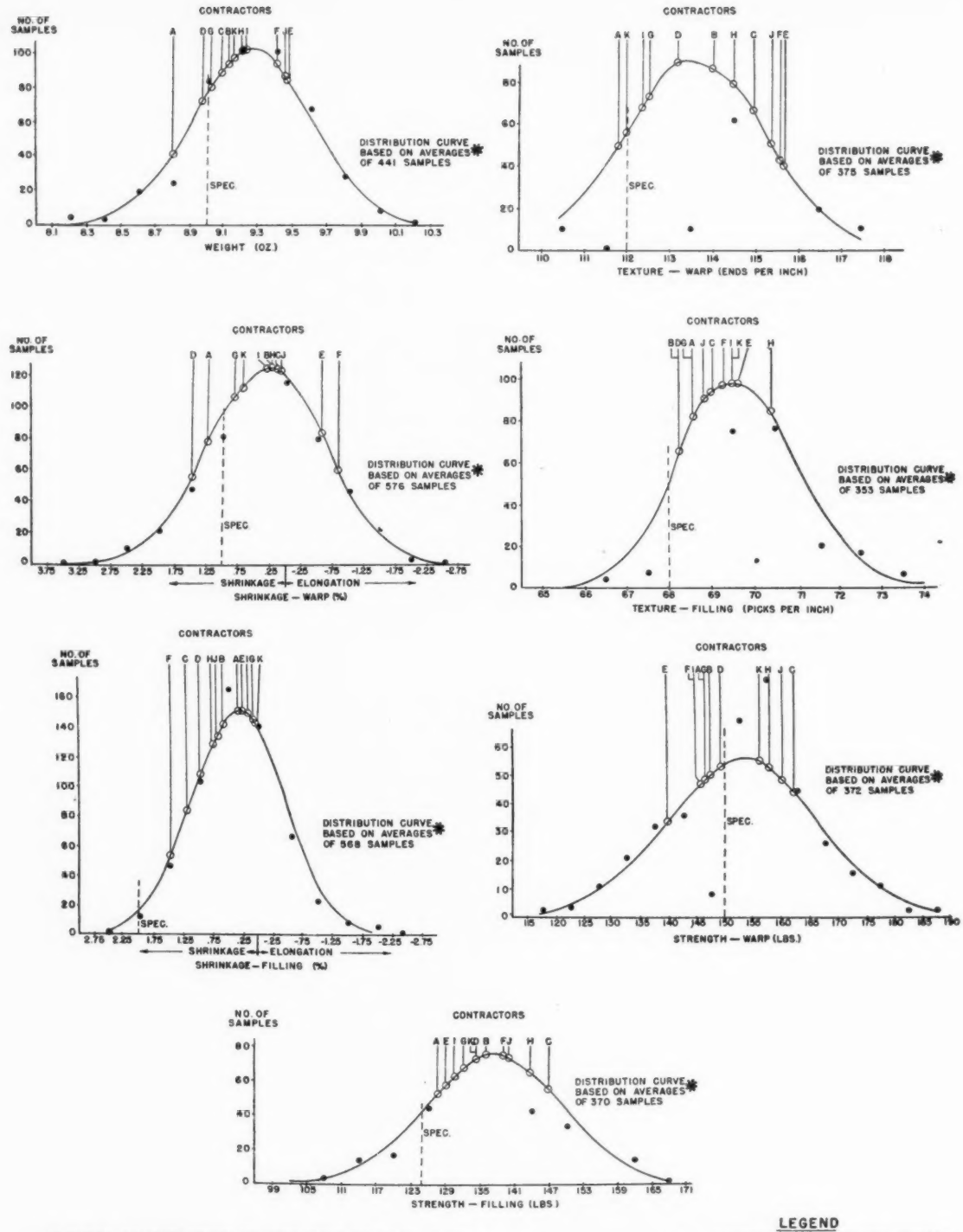
* The number of samples observed. Each sample consists of three tests which are averaged. Only unconditioned test values for Weight and Strength were considered.

** Negative shrinkage denotes elongation.

***Values failing to meet specification requirements.

behind the omission are readily understood and the corrective action taken appears logical upon explanation. First, limitations in the conditioned space at the Philadelphia laboratory did not permit exposure of all test specimens to standard temperature and humidity until moisture equilibrium was reached. Second, the test schedule which had been set up to furnish the contractor prompt notification of acceptance or rejection no later than 24 hours after receipt of the test specimen at Philadelphia did not leave time for a four to six hour conditioning period. The urgent need for materials, the lack of storage space at the contractor's plant, and the strained transportation facilities during the war all contributed pressure to early reporting of test data.

Of the properties listed in Table I, only weight and breaking strength were considered to be significantly affected by moisture content of the material and so when doubt existed as to the conformance of a given specimen with specification weight or strength requirements the fabric was conditioned and then retested. Because of this practice weight and strength data presented in Figures 2, 3, and 4 are generally lower than true specimen values when tested at standard conditions. The data showed that a high percentage of the fabrics were below all specification requirements. These failures were dealt with in many ways: the lots considered below standard were rejected outright; the defective lots were accepted with contractual penalties as agreed upon with the contracting officer; or the lots were accepted without penalty but with a warning of failure to pass laboratory tests. The course of action taken by the contracting officer depended upon the nature and extent of the deficiency and the immediate demand for the material.


CONTRACTORS
NO. OF SAMPLES
DISTRIBUTION CURVE BASED ON AVERAGES* OF 441 SAMPLES
SPEC.
WEIGHT (OZ.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 375 SAMPLES
TEXTURE — WARP (ENDS PER INCH)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 576 SAMPLES
SHRINKAGE — ELONGATION
SHRINKAGE — WARP (%)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 353 SAMPLES
TEXTURE — FILLING (PICKS PER INCH)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 568 SAMPLES
SHRINKAGE — FILLING (%)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 372 SAMPLES
STRENGTH — WARP (LBS.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 370 SAMPLES
STRENGTH — FILLING (LBS.)

* THREE MEASUREMENTS OR TEST MADE ON EACH SAMPLE AND THE AVERAGE OF THESE THREE RECORDED AS A REPRESENTATIVE VALUE FOR THE SAMPLE

LEGEND

o — CONTRACTOR'S WEIGHED AVERAGE

• — OBSERVED FREQUENCY

Figure 2

Average Quality Level of Cloth, Cotton, Sateen, Wind-Resistant, 9 Oz., Type I, Delivered at P.Q.M.D. During June and July, 1944

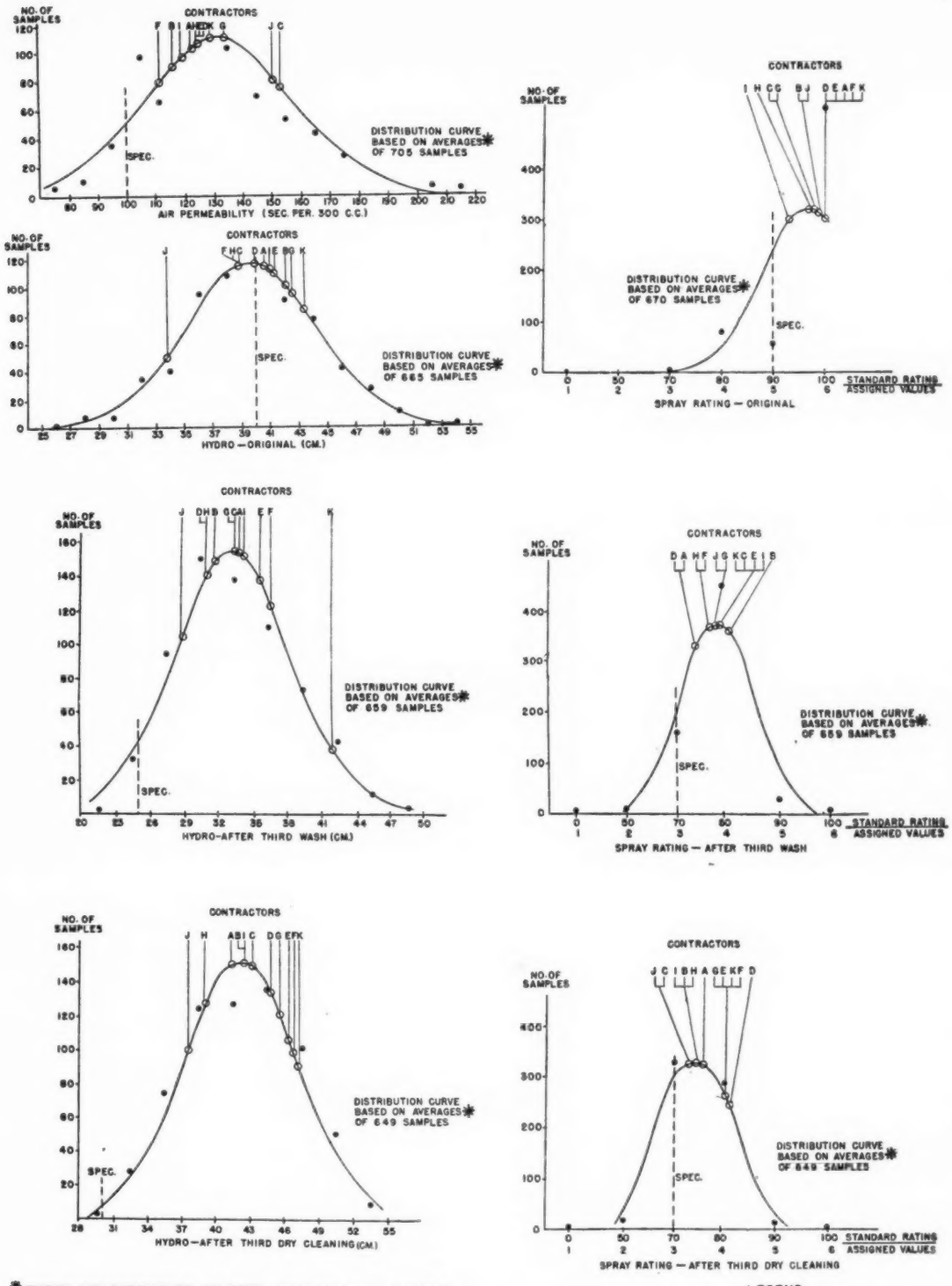
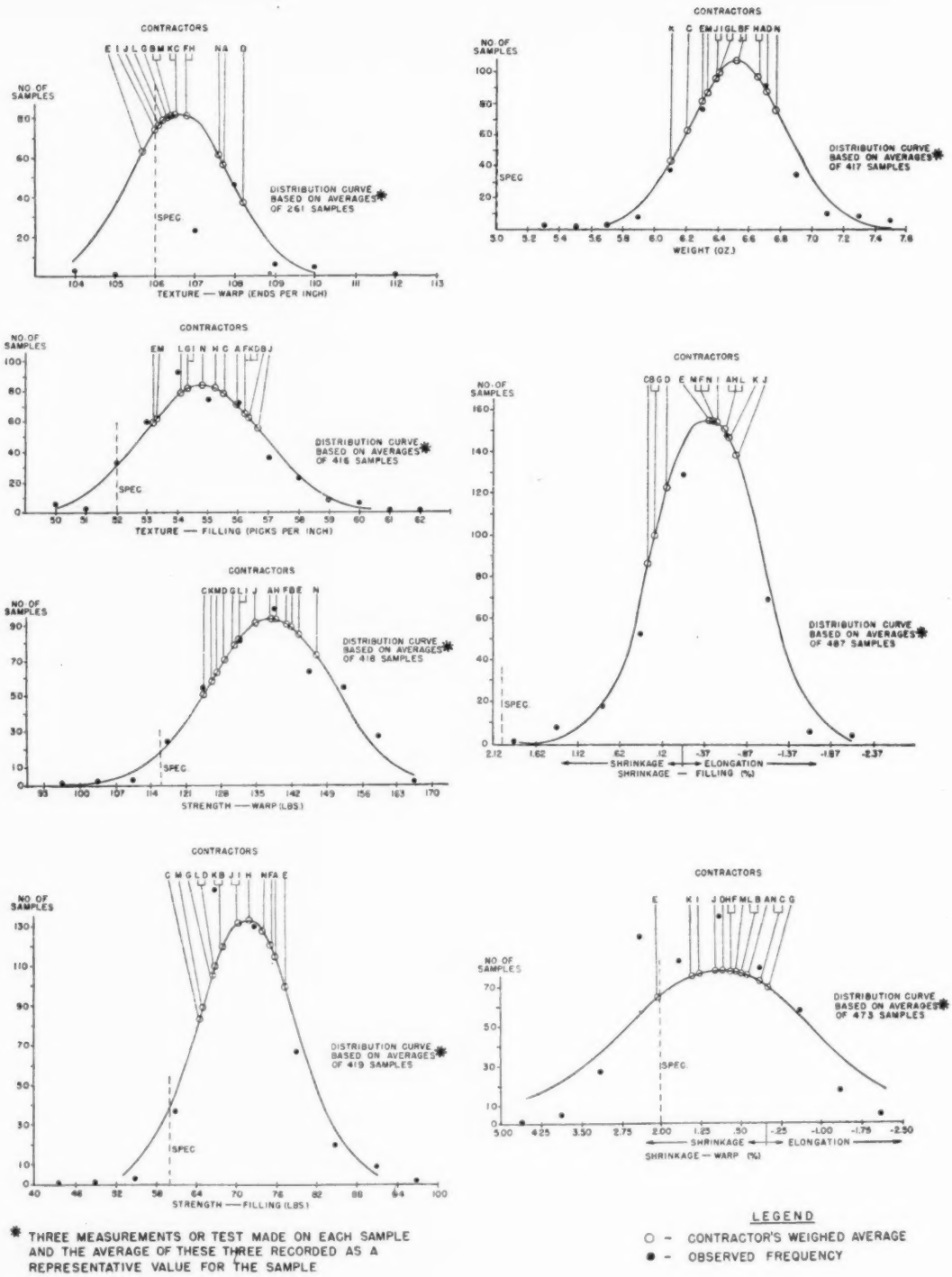

NO. OF SAMPLES
CONTRACTORS
DISTRIBUTION CURVE BASED ON AVERAGES* OF 705 SAMPLES
SPEC.
AIR PERMEABILITY (SEC. PER. 300 C.C.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 665 SAMPLES
HYDRO—ORIGINAL (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 670 SAMPLES
STANDARD RATING ASSIGNED VALUES
SPRAY RATING — ORIGINAL
DISTRIBUTION CURVE BASED ON AVERAGES* OF 659 SAMPLES
HYDRO—AFTER THIRD WASH (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 659 SAMPLES
SPRAY RATING — AFTER THIRD WASH
DISTRIBUTION CURVE BASED ON AVERAGES* OF 649 SAMPLES
HYDRO—AFTER THIRD DRY CLEANING (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 649 SAMPLES
SPRAY RATING — AFTER THIRD DRY CLEANING
* THREE MEASUREMENTS OR TEST MADE ON EACH SAMPLE AND THE AVERAGE OF THESE THREE RECORDED AS A REPRESENTATIVE VALUE FOR THE SAMPLE
LEGEND
o — CONTRACTOR'S WEIGHED AVERAGE
• — OBSERVED FREQUENCY

Figure 2 (Continued)

Average Quality Level of Cloth, Cotton, Sateen, Wind-Resistant, 9 Oz., Type I, Delivered at P.Q.M.D. During June and July, 1944.


CONTRACTORS
E I J L G B M K C F H N A O
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 261 SAMPLES
TEXTURE — WARP (ENDS PER INCH)
CONTRACTORS
K C E M J I G L B F H A D N
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 417 SAMPLES
WEIGHT (OZ.)
CONTRACTORS
E M L G I N H C A F K D B J
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 416 SAMPLES
TEXTURE — FILLING (PICKS PER INCH)
CONTRACTORS
C B G D E M F N I A H L K J
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 487 SAMPLES
SHRINKAGE ← → ELONGATION
SHRINKAGE — FILLING (%)
CONTRACTORS
C K M D G L I J A H F B E N
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 418 SAMPLES
STRENGTH — WARP (LBS.)
CONTRACTORS
C M G L D K B J I H N F A E
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 419 SAMPLES
STRENGTH — FILLING (LBS.)
CONTRACTORS
E K I J D H F M L B A N C G
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED ON AVERAGES* OF 473 SAMPLES
SHRINKAGE ← → ELONGATION
SHRINKAGE — WARP (%)
LEGEND
○ - CONTRACTOR'S WEIGHED AVERAGE
● - OBSERVED FREQUENCY

* THREE MEASUREMENTS OR TEST MADE ON EACH SAMPLE AND THE AVERAGE OF THESE THREE RECORDED AS A REPRESENTATIVE VALUE FOR THE SAMPLE

Figure 3

Average Quality Level of Cloth, Cotton, Poplin, Wind-Resistant, 5 Oz., Type II, Delivered at P.Q.M.D. During May, June and July, 1944.

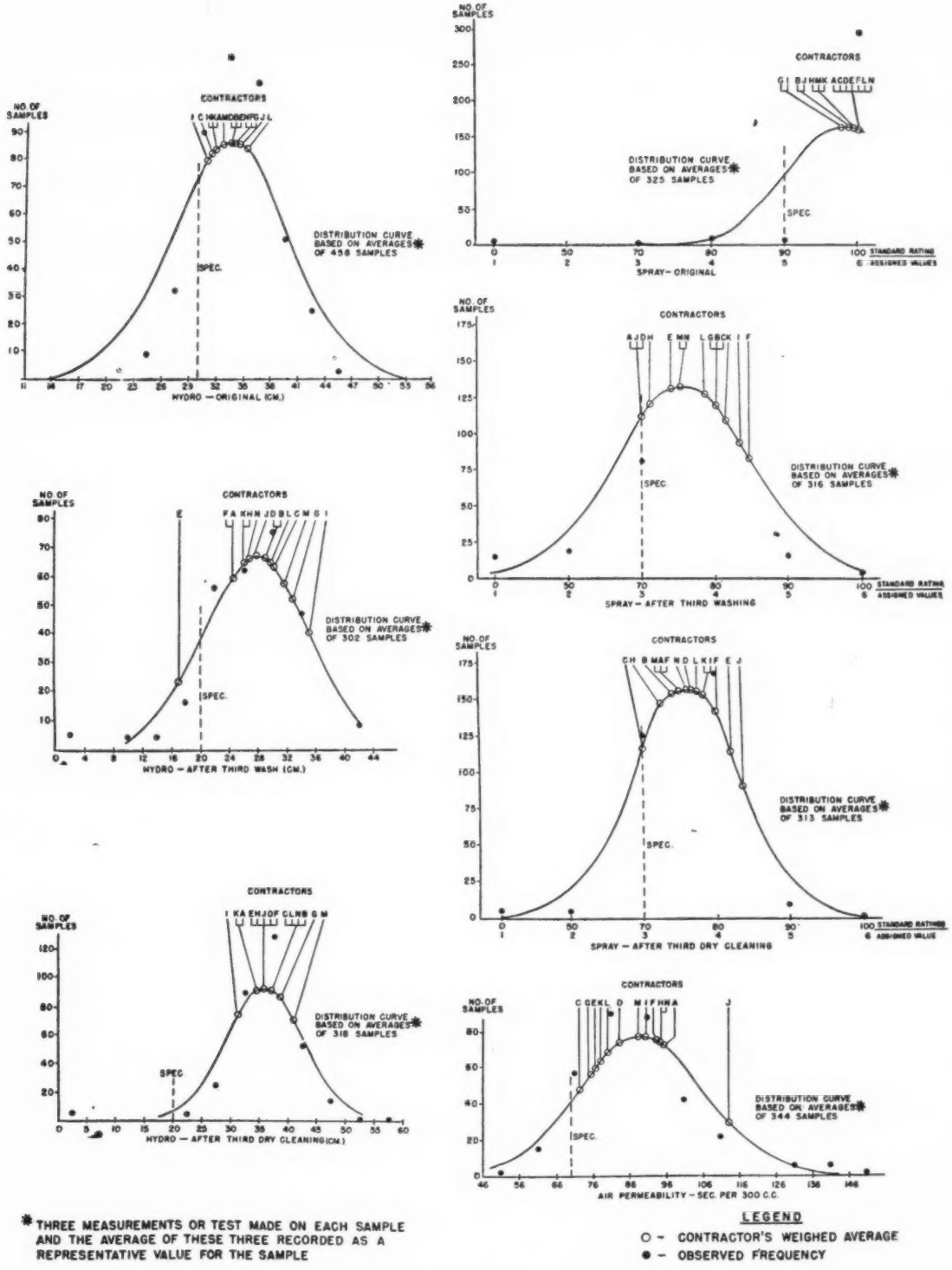

NO. OF SAMPLES
CONTRACTORS
DISTRIBUTION CURVE BASED ON AVERAGES* OF 458 SAMPLES
SPEC.
HYDRO — ORIGINAL (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 325 SAMPLES
SPRAY — ORIGINAL
DISTRIBUTION CURVE BASED ON AVERAGES* OF 316 SAMPLES
SPRAY — AFTER THIRD WASHING
DISTRIBUTION CURVE BASED ON AVERAGES* OF 302 SAMPLES
HYDRO — AFTER THIRD WASH (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 313 SAMPLES
SPRAY — AFTER THIRD DRY CLEANING
DISTRIBUTION CURVE BASED ON AVERAGES* OF 318 SAMPLES
HYDRO — AFTER THIRD DRY CLEANING (CM.)
DISTRIBUTION CURVE BASED ON AVERAGES* OF 344 SAMPLES
AIR PERMEABILITY — SEC. PER 300 C.C.
* THREE MEASUREMENTS OR TEST MADE ON EACH SAMPLE AND THE AVERAGE OF THESE THREE RECORDED AS A REPRESENTATIVE VALUE FOR THE SAMPLE
LEGEND
○ – CONTRACTOR'S WEIGHED AVERAGE
● – OBSERVED FREQUENCY

Figure 3 (Continued)

Average Quality Level of Cloth, Cotton, Poplin, Wind-Resistant, 5 Oz., Type II, Delivered at P.Q.M.D. During May, June and July, 1944.

TABLE III

Average Quality Level of Cloth, Cotton, Poplin, Wind-Resistant
Delivered at PQMD During May, June and July, 1944

Contractor	*Approx. number of samples observed	Weight Ozs. (Spec. 5.0 min.)	Texture Warp ends per in. (Spec. 106 min.)	Texture Filling picks per in. (Spec. 52 min.)	Strength Warp lbs. (Spec. 116 min.)	Strength Filling lbs. (Spec. 60 min.)	**Shrinkage Warp % (Spec. 2 max.)	**Shrinkage Filling % (Spec. 2 max.)	Air permeability Gurley Sec. (Spec. 70 min. 390 cc per .1 sq. in.)	Spray Orig. (Spec. 90 min.)	Spray 3rd wash (Spec. 70 min.)	Spray 3rd D. C. (Spec. 70 min.)	Hydro Orig. cm (Spec. 30 min.)	Hydro 3rd wash cm (Spec. 20 min.)	Hydro 3rd D. C. cm (Spec. 20 min.)
A	31	6.66	107.7	55.9	138.0	75.9	.39	—.61	95.5	100	70.0	75.2	32.0	24.5	34.6
B	120	6.53	106.4	56.3	141.8	68.7	.49	.21	—	98.4	80.0	74.1	33.7	29.1	37.1
C	6	6.20	106.5	55.5	124.7	64.8	.12	.29	72.6	100	$0.0	70.0	31.4	30.2	36.6
D	11	6.71	108.2	56.2	128.6	67.2	.84	.08	83.2	100	70.0	76.6	33.5	28.9	35.6
E	29	6.30	105.7***	53.2	143.3	77.4	2.07***	—.42	76.5	100	74.0	82.0	33.7	16.9***	35.5
F	23	6.51	106.8	56.2	141.0	75.0	.66	—.45	93.1	100	84.1	75.0	34.0	24.4	35.8
G	10	6.41	106.3	54.3	130.7	66.6	—.01	.20	75.3	97.5	80.0	80.0	34.0	32.4	38.4
H	40	6.65	106.8	55.2	138.7	72.0	.69	—.61	94.8	99.2	71.1	72.4	31.8	26.0	35.5
I	28	6.39	106.0	54.3	132.1	70.6	1.26	—.51	90.5	97.8	83.3	78.4	30.9	35.0	31.3
J	38	6.38	106.1	56.6	134.7	70.5	.94	—.74	113.0	98.5	70.0	83.5	34.4	27.8	35.5
K	50	6.10	106.5	56.2	126.3	68.4	1.37	—.65	78.1	99.6	81.3	78.2	31.9	26.0	34.6
L	17	6.42	106.2	54.1	131.5	67.1	.50	—.62	80.3	100	78.4	77.5	35.3	29.4	36.9
M	25	6.33	106.4	53.3	126.9	65.3	.59	—.44	88.4	99.5	75.2	74.8	32.8	31.4	40.7
N	22	6.77	107.6	54.8	146.7	74.3	.14	—.45	94.8	100	75.3	76.0	33.9	26.5	37.0
No. of Samples observed in determining dist. curve.....		417	261	417	418	419	473	487	374	458	302	318	458	302	318

* The number of samples observed. Each sample consists of three tests which are averaged Only unconditioned test values for Weight and Strength were considered.
** Negative shrinkage denotes elongation.
*** Values failing to meet specification requirements.

The average property values for each contractor's fabric have been computed and are listed in Tables II and V inclusive. A circle identified by proper alphabetic code has been placed on the frequency curves of Figures 2, 3, and 4 to show the relative performance levels of each contractor.

In Figure 2 it is seen that contractor A has furnished 9-oz. sateeen fabric whose average weight, warp texture, warp strength and warp shrinkage failed to meet specification requirements, while contractor D consistently failed in weight, warp shrinkage, and warp strength. The majority of the contractors produced sateen which tested, on the average, well above specification requirements in warp and filling texture and shrinkage, weight, filling strength, air permeability, and spray rating. Failure of a high percentage of the fabrics to meet the minimum level of 40 cm. original hydrostatic resistance indicated that this test limit was out of line with the other properties of the desired fabric structure. This requirement was later eliminated from the sateen specification. A similar failure to meet limits set for warp strength is minimized when strength taken at standard conditions of test is considered; nevertheless, it is noted that manufacturers of the other three fabrics were able to meet warp

TABLE IV

Average Quality Level of Cloth, Wool, Melton, 20 Oz., O.D.
Delivered at PQMD During February, March and April 1945

Contractor	*Approx. number of samples observed	Weight Ozs. (Spec. 19–21)	Texture Warp ends per in. (Spec. 46 min.)	Texture Filling picks per in. (Spec. 44 min.)	Strength Warp lbs. (Spec. 70 min.)	Strength Filling lbs. (Spec. 60 min.)
A	137	20.1	47	45	79	70
B	19	20.6	48	45	87	67
C	98	20.0	47	45	86	85
D	21	21.3**	46	46	80	80
E	7	20.6	47	44	90	79
F	10	20.4	48	44	90	79
G	18	20.7	46	44	79	87
H	19	20.5	47	46	90	91
I	64	20.6	47	44	98	77
J	76	20.9	48	46	88	67

* The number of samples observed. Each sample consists of three tests which are averaged. Only unconditioned test values for Weight and Strength were considered.
** Values failing to meet specification requirements.

TABLE V

Average Quality Level of Cloth, Cotton, Herringbone Twill
Delivered at PQMD During April, May and June, 1944

Contractor	*Approx. Number of Samples observed	Weight Ozs. (Spec. 8.5 min.)	Texture Warp ends per in. (Spec. 72 min.)	Texture Filling picks per in. (Spec. 46 min.)	Strength Warp lbs. (Spec. 125 min.)	Strength Filling lbs. (Spec. 85 min.)	**Shrinkage Warp % (Spec. 1% max.)	**Shrinkage Filling % (Spec. 1% max.)
A	14	8.80	79.1	48.1	136.8	93.1	— .58	—1.00
B	16	8.55	75.2	47.6	137.1	100.6	— .38	— .69
C	160	8.80	79.0	51.1	***123.5	101.1	— .36	— .27
D	24	8.92	74.9	48.8	131.7	89.5	.27	— .30
E	32	9.00	75.1	47.6	138.8	93.4	.26	— .79
F	18	9.21	77.8	49.1	141.2	93.3	.85	—1.14
G	88	8.86	75.4	48.1	138.5	107.0	— .68	— .64
H	33	8.86	75.6	47.4	144.3	93.5	— .45	.22
I	17	***8.47	73.0	47.6	132.5	90.9	.68	.63
J	12	8.60	77.4	47.0	***118.2	109.0	— .09	— .61
K	18	8.55	74.0	47.0	129.3	101.0	— .03	— .21
L	25	9.08	74.7	48.1	142.8	91.4	.06	— .20
M	14	8.83	75.7	46.9	129.3	119.0	— .78	— .33
N	39	8.87	77.8	47.8	130.7	97.4	— .22	— .60
O	554	***8.37	73.8	49.0	135.3	88.6	— .97	.43
P	50	8.50	92.5	49.8	138.1	100.9	.09	—1.03
Q	28	8.77	76.2	47.9	134.8	93.7	—1.48	— .36
R	72	8.63	79.6	48.5	131.3	98.2	.12	— .97
S	26	8.72	88.0	47.8	128.3	137.9	— .65	—1.08
T	15	8.70	78.0	49.1	134.8	120.0	.46	.03

* Three tests are made for each fabric characteristic on each sample. The average of these three is taken as representative of that sample.
** Negative shrinkage denotes elongation of the fabric.
*** Values failing to meet specification requirements.

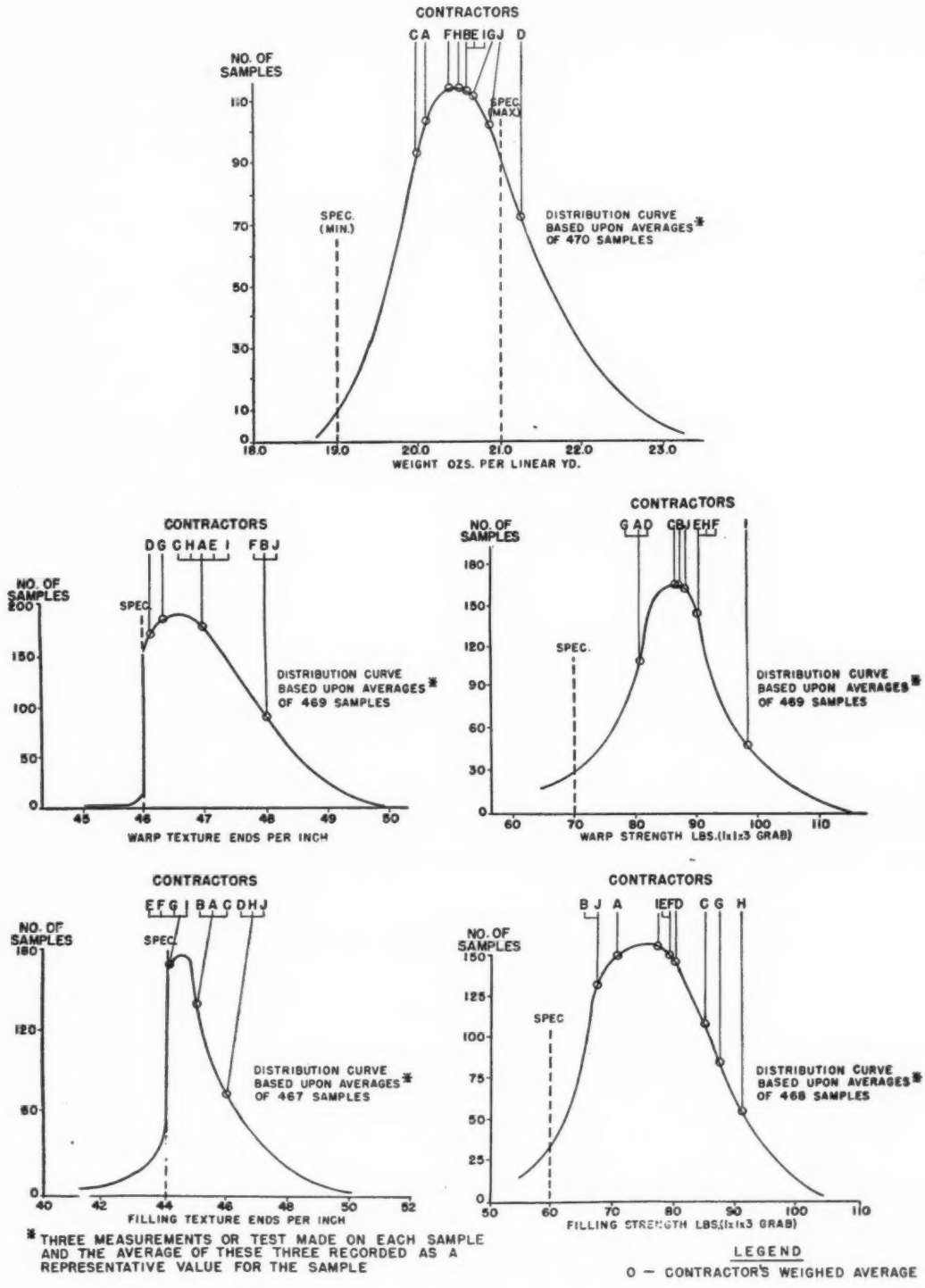

CONTRACTORS
C A F H B E I G J D
NO. OF SAMPLES
SPEC. (MAX.)
SPEC. (MIN.)
DISTRIBUTION CURVE BASED UPON AVERAGES* OF 470 SAMPLES
WEIGHT OZS. PER LINEAR YD.
CONTRACTORS
D G C H A E I F B J
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED UPON AVERAGES* OF 469 SAMPLES
WARP TEXTURE ENDS PER INCH
CONTRACTORS
G A D C B I E H F
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED UPON AVERAGES* OF 469 SAMPLES
WARP STRENGTH LBS.(1x1x3 GRAB)
CONTRACTORS
E F G I B A C D H J
NO. OF SAMPLES
SPEC.
DISTRIBUTION CURVE BASED UPON AVERAGES* OF 467 SAMPLES
FILLING TEXTURE ENDS PER INCH
CONTRACTORS
B J A I E F D C G H
NO. OF SAMPLES
SPEC
DISTRIBUTION CURVE BASED UPON AVERAGES* OF 468 SAMPLES
FILLING STRENGTH LBS.(1x1x3 GRAB)
* THREE MEASUREMENTS OR TEST MADE ON EACH SAMPLE AND THE AVERAGE OF THESE THREE RECORDED AS A REPRESENTATIVE VALUE FOR THE SAMPLE
LEGEND
O — CONTRACTOR'S WEIGHED AVERAGE

Figure 4

Average Quality Level of Cloth, Wool, Melton, 20 Oz., O.D. Piece Dyed, Delivered at P.Q.M.D. During February, March and April, 1945.

strength limits without conditioning of the sample prior to test. Data plotted for hydrostatic tests after laundering and dry cleaning indicated the possibility of raising these requirements without resulting in a large number of rejections. This has been substantiated by the most recent specification USA-6-337A, dated 1 February, 1946. Based upon an average of 5 samples, the hydrostatic resistance after laundering has been raised from 25 to 30 cm. and after dry cleaning from 30 to35 cm. Only contractor J would fail significantly in meeting the new specification for hydrostatic after laundering and all the contractors could easily meet the new value for dry cleaning. In addition, the limit for the warp shrinkage maximum has been raised to % which would be met by all. Similarly, the filling shrinkage maximum could be reduced without causing serious rejection.

Of all the contractors delivering 5-oz. poplin, only one, Company E, (Figure 3) failed on the average to meet specification requirements for separate characteristics. The frequency distribution curve in Figure 3 indicates an unusually large number of failures to meet the warp texture requirement for poplin. Reference to raw data, however, shows a large number of counts of 106 ends per inch with relatively few counts of 105 and 104 ends per inch. This phenomenon which was obscured in the statistical curve smoothing process indicated either absolute control in manufacture which caused a sharp break in the normal distribution of the raw data, or hesitancy of the inspector to reject a lot for lack of one end per inch. In any event the requirement was easily met.

It was noted that minimum limits for filling texture, warp and filling strength, filling shrinkage, weight, hydrostatic resistance after washing and dry cleaning, and air permeability were readily exceeded. Original spray requirements were easily met although not clearly shown in the curve. This is due to the fact that the original data were cut short at the rating of 100, thus distorting the smooth prediction curve. The basic data, however, showed few specimens testing original spray at 90, 80 and 70. Accordingly, it was found possible to increase this requirement in subsequent specifications. This is shown by the latest Specification USA-6-321B, dated May 1946. Here more rigid requirements, based upon an average of 5 samples, have raised the minimum for the spray rating after laundering from 70 to 80. Hydrostatic resistance after dry cleaning has been increased from 20 to 35 cm. which can be met by all but contractors A, I, and K. The minimum for each sample for hydrostatic resistance after laundering was raised to 25 cm. Only contractors A, E, and F would fail to meet this level, but most would not meet the high one of 30 cm. based, however, on an average of 5. In the case of weight and filling shrinkage, significant increases in requirements were possible without affecting acceptance percentages. On the other hand, manufacturers had difficulty staying within the 2% warp shrinkage limit.

Figure 4 shows that the various contractors adhered to the specifications established for weight, texture and breaking strength for melton cloth. There has not been any change to date on the specifications and no necessity was indicated.

In Table 5, it is seen that contractors I and O had trouble in meeting weight requirements for herringbone twill, while contractors C and J were low on warp strength. As a whole, little difficulty was experienced in meeting the herringbone twill limits for weight, texture, strength, and shrinkage, and no necessity was indicated for any revision of specification requirements with respect to this failure.

The procedures discussed were also followed in the analysis of properties of a series of additional wool fabrics procured by the Quartermaster Corps. The results of such studies are to be reported at a later date. The fact to be emphasized is that analysis of acceptance test data over a period of time has been useful to a government procurement depot in critical evaluation of relative quality standards of wartime contractors and in establishing the validity of specification limits in accordance with full-scale manufacturing capacities. Studies of this nature have demonstrated the existence of poor quality levels on the part of certain manufacturers and have resulted in (1) immediate efforts on the part of the mills affected to correct the situation and (2) the establishment of optimum compromise requirements in material specifications.

The program outlined reflects but a part of the efforts of technicians of the Office of The Quartermaster General to satisfy military requirements for textile materials by setting the highest specification limits which the industry could meet and still satisfy the extreme demands of wartime procurements.

Acknowledgement

The author wishes to acknowledge the work of Norman B. Edelman, Technologist, and Miss Martha Brandriff, Statistician, in the collection and preparation of these data.

• PATENT DIGEST •

Stabilizing Wool Fibers—Bisulfites of Organic Bases

A, 2, 04

U. S. Pat. 2,437,965
(Lawrence Rich. Bruce Inc., Michaels-Lustig, March 16, 1948)

PAUL WENGRAF

The term "relaxation", used in this patent specification comprises treating the fiber in such a way that it passes to a condition of rubber-like consistency. In this condition the fibers can be readily deformed and this deformation can be maintained permanently. It can thereby be concluded that the process protected by the present patent has quite generally the same purpose as the well known stabilizing or setting operations. Here as well as in former processes the tendency is obviously to destroy the disulfide linkages and to reduce the shrinking properties. The inventors refer to alkali treatments at a pH of 10 and more, which were likely to damage the fiber substance, as well as to bisulfite or bisulfite-alcohol treatments. These latter preparations are said to be disadvantageous because bisulfite by itself retards swelling and decreases the speed of relaxation. It is, on the other hand, impossible to obtain a bisulfite solution of pH = 5.5 in alcohol (the optimum pH-value); at a pH of 5.5 a bisulfite solution contains certain amounts of sodium sulfite, soluble in water but not in 40% alcohol which is generally used in combination with alkali bisulfites. The invention consists of reacting the fibers (in the present case hair, wool or other animal fibers as well) with *monoethanolamine bisulfite.* This product is extremely soluble, whereby the desired pH of 5-6 can be obtained without undue swelling of the fibers. Another bisulfite compound mentioned in this invention is biguanidine bisulfite. The superior effect is explained not only by the decreased swelling action of the bisulfite but also by the use of an aqueous solution, containing a relatively high amount of HSO_3 ions. It has been found that only secondary valences of the animal fiber but not the primary disulfide linkages are attacked.

(*Continued on Page* 630)

Proceedings of the
American Association of Textile Chemists and Colorists

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Intersectional Contest Committee, Mid-West Section

DR. LEONARD J. ARMSTRONG
Chairman, Mid-West Section Intersectional Contest Committee

DR. LEONARD J. ARMSTRONG, in charge of Textile Development and Technical Service Group in the Development Department of Armour & Co., Chicago, is Chairman of the Intersectional Contest Committee of the Mid-West Section. The contest will take place at the National Convention in Augusta, Georgia, October 23.

Dr. Armstrong received his A.B. from St. Olaf College in 1937, his M.S. from North Dakota Agricultural College in 1939 and his Ph.D. from the University of Illinois in 1942. He was employed in the Textile Chemicals Department of Rohm & Haas Company, Philadelphia, until October of 1946. He is a member of the American Chemical Society, Sigma Xi, Phi Lambda Upsilon and Alpha Chi Sigma.

Other members of Dr. Armstrong's committee are:

Elliott Morrill, Rit Products Corp.; John C. Moertel, E. I. du Pont de Nemours & Co., Inc.; Leslie O. Moyer, Phoenix Dye Works; John E. A. Schroder, General Dyestuff Corp.; Jerome Kritchevsky, Ninol Labs.

The paper, which will be presented at the Contest in Augusta by Dr. Armstrong, is entitled: "The Solubilization of Dyestuffs with Surface Active Agents." Gordon Stott of Ciba Company, Inc. will represent the Section as judge.

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Colour Index

A FEW more copies of the *Colour Index* and *Supplement* of the British Society of Dyers and Colourists are available through the Secretary of the Association, Lowell Textile Institute, Lowell, Mass., at $30.00 per set postpaid, in the United States. Orders will be filled in sequence of their receipt, with preference to members of the Association and prepayments.

—♦ ♦—

Fall Meeting, Mid-West Section

THE Fall Meeting of the Mid-West Section will be held on September 25th at the Bismarck Hotel, Chicago. The program for the afternoon session, starting at 2:30 P.M., is now being arranged. Dinner will be served at 7:00 P.M. and will be followed by the election of officers. The evening speaker will be Henry E. Millson, Calco Chemical Division, American Cyanamid Company. He will discuss the effect of metals on tippy dyeing.

—♦ ♦—

September 24th Meeting, NNE Section

THE next meeting of the Northern New England Section will be held on September 24th at the Andover Country Club, Andover, Mass. The speaker will be Norman F. Barnes of General Electric Company, his subject being: "The A B C's of Color and Spectrophotometry."

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September 25th Meeting, Southeastern Section

A MEETING of the Southeastern Section will be held on September 26th at the Ralston Hotel, Columbus, Georgia. A technical program will be presented at 4:00 P.M. with the following speakers and subjects: E. O. Kruegel, Office of the Quartermaster General: "The Future of Cotton Duck in Military Uses"; Dr. Donald H. Powers, Monsanto Chemical Company: "New Developments in the Application of Resins to Textile Fibers and Fabrics." Dinner will be served at 6:30 P.M. and will be followed by a program of magic presented by A. R. Thompson of Ciba Company, Inc.

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Examination Announced by United States Civil Service Commission for Cotton Technologist Positions

POSITIONS are to be filled in the Department of Agriculture, in Washington, D. C., South Carolina, Mississippi, and Texas, in the following branches of cotton technology: Cottonseed Technology, Fiber Technology, Ginning Technology, and Textile Technology. Salaries range from $3,727 to $6,235 a year.

No written test is required. To qualify, applicants must (a) have completed a full 4-year college course leading to a bachelor's degree in one of the branches of cotton technology; or (b) have had four years of technical experience in cotton technology. In addition, they must have had from 1 to 3 years of progressive professional experience in cotton technology. Graduate study may be substituted for part of the required experience. Detailed information is given in the announcement.

Interested persons may obtain information and application forms at most first- and second-class post offices, from Civil Service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C. Applications must be received by the Executive Secretary of the Board of Examiners at the above address not later than September 9, 1948.

—♦ ♦—

Annual Outing, New York Section

THE Annual Outing of the New York Section was held on Friday, June 25th, at the North Jersey Country Club, Pompton Turnpike, New Jersey. A buffet lunch was served at noon and the usual golf tournament and horseshoe pitching contest were held. A dinner was held in the evening at which the following awards were made:

Golf

Low Gross—Robert Brewer, 81; M. Mulqueen, 81; Wm. Holt, 81.

Kicker's Handicap, Net Score of 76—J. Cunningham, 101 (25)—76; W. Dierks, 101 (25)—76; E. Meili, 96 (20)—76; W. Cohen, 116 (40)—76; F. F. Costello, 111 (35)—76; F. J. Davies, 93 (17)—76.

Kicker's Handicap, Net Score of 70—S. Hoffman, 98 (28)—70; E. Frewin, 85 (15)—70; L. J. Dogin, 110 (40)—70.

Horseshoes

1st Prize—John Maupai.

2nd Prize—Charles Priskma.

Booby—Paul Otto.

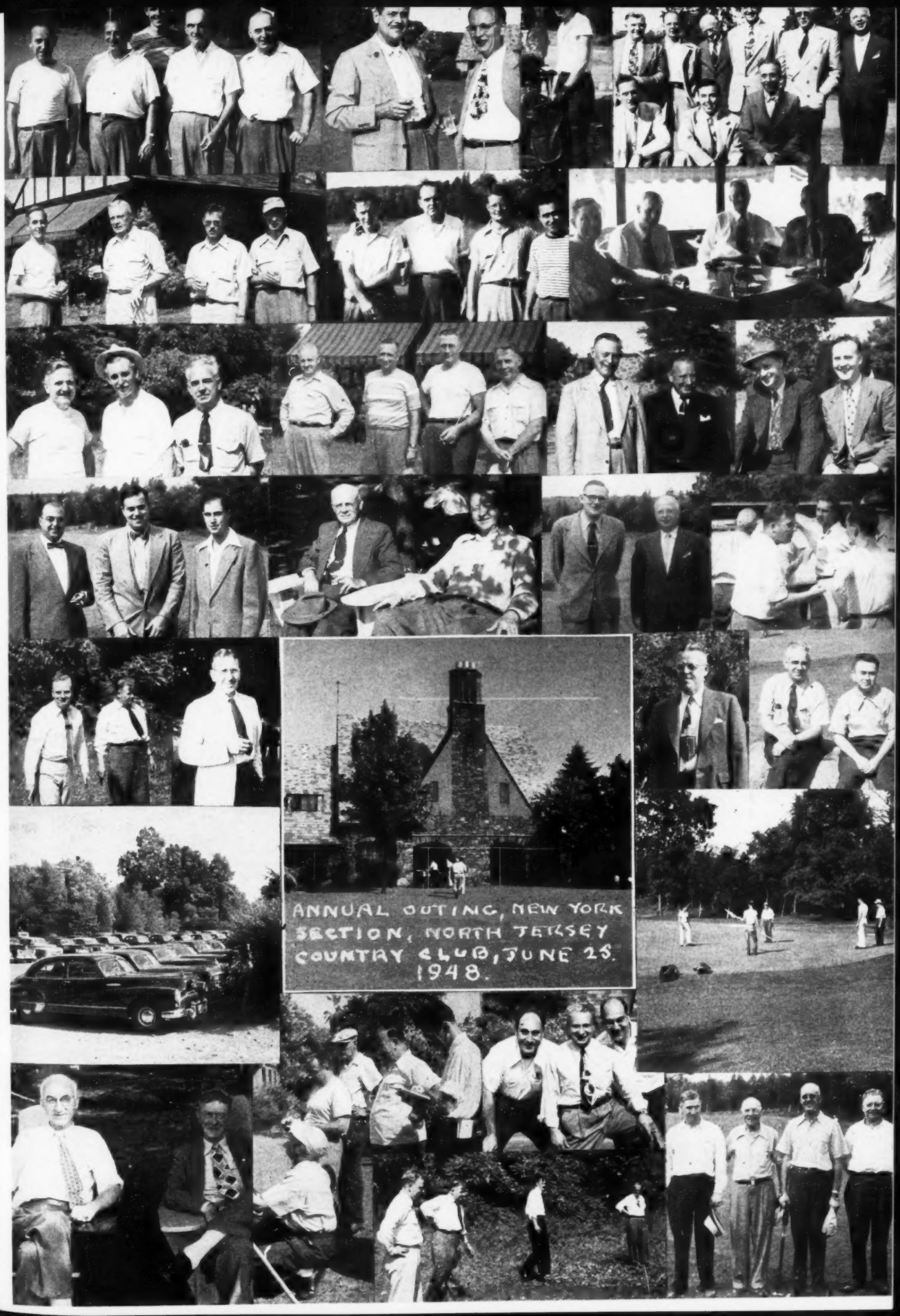
A sterling silver Revere bowl was awarded to Paul A. Dunkel for having previously won the cup for low net three times. Mr. Dunkel has consented that the cup be again placed in competition.

The committee for the outing consisted of the following: Patrick J. Kennedy, Chairman; Hugo Todebush, Golf; Robert W. Holoch, Horseshoes; John H. Hennessey, Finance; Claire W. Bendigo, Press; Charles W. Dorn, Dinner; Paul J. Luck, Prizes and Awards.

The total attendance was about 300.

Respectfully submitted,
Norman A. Johnson, *Secretary*.

Photos at New York Section Outing ——→ by John J. Sokolinski


ANNUAL OUTING, NEW YORK
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EMPLOYMENT REGISTER

This column is open for four insertion per year, per member, without charge Blanks can be obtained from, and filed with, the Secretary of the Association Lowell Textile Institute, Lowell, Mass It is understood that these will be open to inspection by prospective employers who can obtain further information from the Secretary.

48-11

Education: Chemical Engineer, University of Vienna.

Experience: Dyeing and finishing of cotton and synthetic fibers, including application of vats, naphthols and Indigosols, resin finishes, and tricot and tubular goods processing.

Age 45; married, references; U. S. citizen; will go anywhere.

Research Committee Highlights

DIMENSIONAL STABILITY

Dr. W. E. Coughlin, Chairman

Hosiery section—1200 pairs hose being knitted for testing program.

Wool section—Need for clarification of knitted garment situation recognized.

FINISHING MATERIALS

Dr. J. E. Lynn, Chairman

Need help from industry on test methods.

Will approach suppliers again for help on test methods.

Checking of these methods to determine final recommendations as applied to impregnated not coated fabrics.

Gerald V. Carrette—Chief Chemist, B. R. Vickers & Sons, Ltd., Leeds 6, England. Sponsors: F. L. Goodall, F. M. Stevenson.

Walter F. Coleman—Sales. & Tech. Service Repres., E. I. du Pont de Nemours & Co., Inc., Charlotte, N. C. Sponsors: R. H. Smith, P. R. Lindsay.

Harold W. Curtis—Salesman, Edward H. Best & Co., Boston, Mass. Sponsors: F. L. Bume, C. A. Heydon.

Noshir N. Dastur—Asst. Dyeing & Bleaching, Messrs. Tata Industries, Ltd., Nagpur, India. Sponsors: N. M. Mitchell, T. A. Adams.

Edward J. Dziadosz—Asst. Supt., William Whitman Co., Lawrence, Mass. Sponsors: H. Christison, C. L. Nutting.

Robert D. Easdon—Supt. Printing, Perennial Print Works, West Warwick, R. I. Sponsors: R. P. Wood, S. I. Garnett.

Don G. Ebenback—Chemist, E. I. du Pont de Nemours & Co., Inc., Wilmington 99, Del. Sponsors: C. A. Slyvester, E. T. Howell.

Donald H. Edminster—Overseer of Dyeing, Dartmouth Woolen Mills, Inc., Claremont, N. H. Sponsors: P. S. Buffington, S. A. White.

William S. Fair—Chemist, Frank G. North, Inc., Marietta, Ga. Sponsors: G. L. Dozier, W. E. H. Searcy, III.

Edmund K. Flynn—Textile Microscopist, Goodall Sanford, Inc., Sanford, Me. Sponsors: C. W. Lever, J. E. Briggs.

Eduard E. Forster—Dyer, Spinnerin Yarn Co., South Hackensack, N. J. Sponsors: H. E. Hager, L. Fusser.

Edwin G. Frick—Supervisor of Dyeing, Allied Textile Printers, Inc., Paterson, N. J. Sponsors: H. P. Baumann, S. J. Ciongoli.

Chester G. Gomeringer—Chemical Supervisor, E. I. du Pont de Nemours & Co., Inc., Deepwater, N. J. Sponsors: R. T. Reed, S. G. Ford.

Tommie M. Harris—Tech. Service, E. I. du Pont de Nemours & Co., Inc., Charlotte, N. C. Sponsors: N. P. Arnold, T. G. Dulin.

John T. Hasty, Jr.—Demonstrator, E. I. du Pont de Nemours & Co., Inc., Charlotte, N. C. Sponsors: H. H. Field, E. P. Davidson.

Thomas G. Hawley, Jr.—Dir. of Research, United Merchants Labs., Inc., New York 1, N. Y. Sponsors: C. W. Dorn, J. R. Bonnar.

King D. Henry—Southern Repres., The Derby Co., Milledgeville, Ga. Sponsors: F. W. Sturtevant, D. Moss.

A. N. Heyn—Prof., Clemson College, Clemson, S. C. Sponsors: A. R. Macormac, F. J. Rizzo.

Harry B. Hollander—Res. Dept., A. Hollander & Son, Inc., Long Branch, N. J. Sponsors: M. Harris, D. Frishman.

Bertrand L. Hornby—Mgr., B. L. H. Dye-Stuff Co., Providence, R. I. Sponsors: A. N. Graves, R. W. Joerger.

Correction

Re Research Projects, Piedmont Section

UNDER the heading "Research Projects, Piedmont Section," which appeared on page P543 of the August 23rd issue, it was stated that the Sectional Advisory Research Committee of the Piedmont Section had made arrangements with Clemson College to have graduate students assigned projects. This is incorrect. The statement should have read that arrangement had been made with the North Carolina State College Textile School.

CALENDAR

PHILADELPHIA SECTION
Meetings: September 24, November 12, January 28, 1949 (Kugler's, Philadelphia).

NORTHERN NEW ENGLAND SECTION
Meetings: September 24 (Andover Country Club); November 19.

SOUTHEASTERN SECTION
Meetings: September 25 (Columbus, Ga.); December 4 (Atlanta, Ga.).

WESTERN NEW ENGLAND SECTION
Meetings: October 29, December 3, January 14, 1949, February 25, April 8, May 20.

NEW YORK SECTION
Meetings: September 24, November 19, January 14, 1949, February 25, April 1, May 6.
Outing: June 17.

MID-WEST SECTION
Meeting: September 25 (Bismarck Hotel, Chicago).

PACIFIC COAST SECTION
Meeting: October 15 (Mona Lisa Restaurant, 3343 Wilshire Blvd., Los Angeles, Calif.)

SUB-COMMITTEES
Meetings: September 23 (Hotel New Yorker, New York).

COUNCIL
Meeting: September 24 (Hotel New Yorker, New York).

RESEARCH COMMITTEE
Meeting: September 24 (Hotel New Yorker, New York).

NATIONAL CONVENTION
October 21-23 (Sheraton Bon Air Hotel, Augusta, Ga.).

National Meeting and Convention Augusta, Georgia, Oct. 21-23

Headquarters: Sheraton Bon Air Hotel

Technical Program, Augusta Convention

THE TECHNICAL PROGRAM COMMITTEE for the National Convention in Augusta, Georgia, October 21-23, includes:

Dr. Miles A. Dahlen, *National Chairman*
V. B. Holland, *Local Chairman*
M. T. Barnhill
James D. Dean
Dr. Harley Y. Jennings
Andrew J. Kelly
S. M. McKeown

Mr. Holland, who assisted Dr. Dahlen in preparing the program, announces the appointment of the following group meeting leaders:

Robert W. Philip, *Cotton Symposium*
Henry B. Dixon, *Hosiery Group*
Dr. R. E. Rupp, *Cellulosic Group*
A. J. Kelly, *Auxiliaries and Testing Group*
Wyss L. Barker, *Non-cellulosic Group*

The program which has been arranged covers a wide variety of subjects which are designed to provide a program of the greatest possible interest to all members.

MILES A. DAHLEN
National Chairman, Technical Program

The meeting rooms will be spacious and comfortable and large attendances at the different meetings are anticipated. The following program gives information regarding the time* and location of all papers:

Thursday, October 21

2:00 P.M. to 5:00 P.M. *General Technical Meeting:* Ball Room.
Cotton Symposium
Robert W. Philip, Research Division, Callaway Mills, *Chairman.*

1. Leonard Smith, National Cotton Council of America, "Cotton Plans a Research Program."
2. Kyle Ward, Jr., Southern Regional Research Laboratory, "Recent Research on Cotton Properties at the Southern Regional Research Laboratory."
3. C. Norris Rabold, The Erwin Cotton Mills Co., "Modern Trends in Piece Goods Preparation, Dyeing and Finishing."

Friday, October 22

9:30 A.M. to 12:30 P.M. *Testing and Auxiliaries Group Meeting:* Ball Room.
A. J. Kelly, Burkart-Schier Chemical Co., *Chairman.*

1. Sidney M. Edelstein, Dexter Chemical Company, and Carl Z. Draves, General Dyestuff Corp., "A Re-examination of Present Wetting Tests."
2. Margaret S. Furry, Verda K. McLendon and Mary E. Aler, U. S. Dept. of Agriculture, "An Evaluation of Soaps and Synthetic Detergents."
3. A. H. Noble, Jr., Arnold, Hoffman & Company, "Effect of Temperatures on Finishing Compounds."

* For exact time of individual papers see the official program, available at the Convention.

Convention Theme: "Advancing Textiles through Research"

V. B. HOLLAND
Local Chairman, Technical Program

V. B. Holland was born in Norfolk, Virginia on March 12, 1912. "Brad" as he is better known, attended Atlantic University, Elon College and North Carolina State College before receiving scholarships at the University of Mississippi and fellowships at North Carolina State and Vanderbilt University. His graduate work was confined to the fields of organic and agricultural chemistry.

Mr. Holland is the author of published articles on vitamin assay, measurement of towel absorbency, detergency, standard soils for detergency, starch fluidity measurement, and analytical methods for chemicals used in textile processing. He also wrote three of the past six papers which the Piedmont Section presented in the Intersectional Contest held at the National Conventions. He is a member of the following AATCC committees: National Technical Program, Detergency of Cotton and Synthetic Fibers (Chairman), Analytical Methods, Flammability of Consumer Fabrics, Piedmont Section Research Advisory (Chairman), Piedmont Section Intersectional Contest Paper (Chairman). He is also a member of the U. S. Department of Commerce Technical Committee for the Recommended Commercial Standard for Flammability of Textiles and a member of the American Chemical Society.

Mr. Holland is North Carolina District Governor of Y's Men's Clubs International, a member of the Board of Stewards and teacher of the Men's Bible Class of the Trinity Methodist Church of Kannapolis, North Carolina, and a member of the Piedmont Kennel Club, breeding cocker spaniels as an avocation.

Mr. Holland entered the employ of the Cannon Mills Company, Kannapolis, in 1939, as their first chemist, and has directed their laboratories and chemical research for the past nine years.

He married Miss Jessamine Ruby Bland of Raleigh, North Carolina in 1939 and they have a seven-year-old daughter.

4. Elden H. Haller and Marshall H. Odeen, National Technical Laboratories, "Some Interesting Applications of pH Meters and Spectrophotometers in the Textile and Dye Industry."

9:30 A.M. to 12:30 P.M. *Textile Printing Group Meeting:* Hospitality Room.

Raphael E. Rupp, Pacific Mills, *Chairman.*

1. Elliot Broadbent, Glenlyon Print Works, "Textile Printing: Skill or Mystery?"
2. Francis S. Richardson, Waldrich Company, "Textile Printing Techniques."
3. Robert A. Billmeier, Socony-Vacuum Laboratories, "Requirements of Petroleum Solvents in Pigmented Textile Printing Pastes."
4. William B. DePass, Interchemical Corp., sound movie, "Pigmented Emulsions for Textile Printing" and commentary.

2:30 P.M. to 5:30 P.M. *Non-Cellulosic Fibers Group Meeting:* Ball Room.

Wyss L. Barker, National Aniline Division, Allied Chemical & Dye Corp., *Chairman.*

1. W. G. Helmus, Fair Lawn Finishing Company, "Latest Developments in the Dyeing of Synthetic Fibers."
2. Hans Luttringhaus, General Dyestuff Corp., "Application of Leuco Esters of Vat Dyestuffs to Wool."
3. Ernest R. Kaswell, Fabric Research Laboratories, "Low Temperature Properties of Textile Materials."
4. Lee G. Johnston, American Institute of Laundering, "Consumer Problems Created by New Fabrics and Finishes."

2:30 P.M. to 5:00 P.M. *Hosiery Group Meeting:* Hospitality Room.

Henry B. Dixon, May, McEwen, Kaiser Co., *Chairman.*

1. Alfred J. Olson, Phoenix Hosiery Company, "The Treatment and Handling of Nylon Hosiery to Reduce Snagging during Manufacture."
2. Herman B. Goldstein, Warwick Chemical Company, "Laboratory Evaluation of Sizing Materials for Nylon Hosiery Yarns."
3. C. H. Asbury, E. I. duPont de Nemours & Co., Inc., "The Application of Vat Colors to Cotton Half-Hose and Anklets."

Saturday, October 23

9:30 A.M. to 12:30 P.M. Intersectional Contest: Ball Room.

Patrick J. Kennedy, National Chairman of Intersectional Contest Committee, *Presiding.*

Entertainment at Augusta Convention

THE Entertainment Committee for the National Convention in Augusta, Georgia, October 21-23, under the leadership of Robert W. Philip, Chairman, and P. G. Wear, Assistant Chairman, consists of the following:

Henry B. Dixon. R. Wilburn Freeze.
Ernest V. Helms. Joseph E. Moore.
L. E. Whittelsey.

There will be a distinct Southern accent and flavor in the major entertainment features at the National Convention in Augusta.

The famous Negro entertainer, Graham Jackson, who provided entertainment at the Atlanta Convention in 1938, will be heard on the piano and accordion during the dinner honoring Corporate and Charter Members, Thursday night, October 21st. He will be accompanied by a troupe of artists including musicians, singers and dancers who will supply the after-dinner entertainment.

On Friday, October 22nd, there will be a barbecue-fish fry and an old-fashioned Southern square dance for all of our members to participate in. One of the best "hill-billy" bands in the South, complete with "lead couples" and a "caller", will provide the inspiration for this outstanding entertainment feature. Graham Jackson will be on hand with his accordion and piano to provide additional entertainment while you are enjoying your barbecue luncheon.

The hotel orchestra will provide music Friday night, October 22nd, at the Research Dinner and also on Saturday night, October 23rd, at the annual banquet.

Arrangements have been made with the Augusta Country Club for our delegates to play golf there. A number of lockers will be set aside for their use and those who wish to have luncheon or take showers at the Club will be extended these privileges. It is suggested that our members desiring to play golf arrange to do so at some time other than Saturday afternoon and Sunday, due to the fact that this popular course is always crowded at these times. Golfing privileges at the Augusta Municipal Course will also be available to our members. Those desiring to play golf should make arrangements with Joseph E. Moore of the Entertainment Committee at the Registration Desk of the Convention and with Laurie E. Whittelsey of the Entertainment and Transportation Committees for transportation to the golf courses. Any further information regarding entertainment and golf can be had at the Registration Desk by consulting one of the members of the Entertainment Committee.

ROBERT W. PHILIP
Chairman, Entertainment Committee

Robert W. Philip, Chairman of the Entertainment Committee, was born on February 5, 1903 at Jewell (Hancock County), Georgia. Bob says that he did not go to school nor receive any degrees. His success in the business world has been phenomenal, and he deserves much credit for the progress made since he started as Associate Editor of Cotton (now Textile Industries) in Atlanta, Georgia on July 16, 1919. He was promoted to Editor on March 2, 1928 which position he held until December 31, 1943. During his last five years with Cotton, he was also Vice-President of W. R. C. Smith Publishing Company. He was appointed Vice-President and Executive Director of Callaway Institute, Inc., LaGrange, Georgia on January 1, 1944. He has been Vice-President and Director of Research of Callaway Mills Company, LaGrange, since December 1, 1947.

He has been Secretary-Treasurer of Textile Operating Executives of Georgia since September, 1922. He was chairman of the Southeastern Section of AATCC in 1938-39 and has also served as Secretary and National Councilor for this Section. He was a member of the first Olney Medal Award Committee and is a member of the National Convention Committee and the National Publications Committee of the AATCC.

Bob is an honorary member of Theta Chapter of Phi Psi, National Textile Fraternity. He served as a member of, and also Secretary of, the American Textile Mission to Japan in 1937, and also as Secretary of the American Textile Mission to Great Britain in 1948.

Mr. Philip was married to Miss Margaret Ellen Hancock on June 8, 1929 and has two children, Robert, Jr., 12, and Margaret Virginia, 8. He refuses to tell what his hobby is, but he undoubtedly has many interesting ones and is always able to tell a good story.

Registration and Reception at Augusta Convention

THE Committee on Registration and Reception, headed by A. Kempton Haynes of Rohm & Haas Company, Inc., Chairman, and L. E. Whittelsey, Augusta Chemical Company, Assistant Chairman, will be assisted by the following members:

Edward C. Chapin,
The Deltex Company,
(Northern New England Section)
Raymond J. Carey,
General Dyestuff Corp.,
(Western New England Section)
Robert W. Joerger,
Franklin Process Company.
(Rhode Island Section)
Paul J. Luck,
Calco Chemical Division, American Cyanamid Company.
(New York Section)
A. E. Raimo,
John Campbell Company.
(Philadelphia Section)
J. G. Stott
Ciba Company, Inc.
(Mid-West Section)
Norman P. Arnold,
J. T. Bohannon, Jr.
Charles C. Cayce.
W. F. Crayton.
P. H. Del Plaine.
Chester L. Eddy.
W. A. Haines.
A. Thomas Hanes, Jr.
John R. Hopkins.
J. W. Ivey.
F. L. Kibler.
T. J. Marler.
E. Taylor Mobley.
H. H. Morrison.
John C. Robertson.
H. A. Rodgers.
Robert D. Sloan.
Robert H. Smith.
Fred E. Sprock.

The Reception Committee will have members to greet you at the railroad station and the airport and, with the assistance of the Transportation Committee, will have bus service to take you to your hotel when you arrive for the Convention. If you have any difficulties, please consult one the the members of the Reception Committee who will be properly identified with a scarlet badge.

When you arrive at the Bon Air Hotel, please proceed to the Registration desk to obtain your tickets for the banquets and barbecue and advise the attendant your hotel and room number so that you can be located if necessary, during the Convention. By properly attending to this detail you will be able to learn where your friends are registered in the various hotels. A card index file giving all information about those attending the Convention will be readily accessible at the Registration Desk. The card will contain the registrants' hotel, room number, etc.

A. KEMPTON HAYNES
Chairman, Registration and Reception Committee

A. Kempton Haynes was born in Haverhill, Massachusetts in 1906 and attended grammar and high school in the same town. He went to Lowell Textile Institute and graduated with the degree of Bachelor of Textile Chemistry in 1929.

Mr. Haynes entered the Textile Research Laboratory of Rohm & Haas at Bristol, Pennsylvania in June 1929 and was transferred to the southern office in the sales department in February, 1931 and then was transferred to the Atlanta office in 1935.

Mr. Haynes became a member of AATCC while at Lowell Textile and was chairman of the Student Chapter in 1929. He is the immediate past chairman of the Southeastern Section and has held various other committee offices in the AATCC. He is a member of Phi Psi Fraternity and a Past Grand Council Vice-President. He is interested in the Boy Scouts and is a member of the National Council in New York.

Mr. Haynes is married and has one son, A. Kempton, Jr. who attends grammar school.

Mr. Haynes and his committee have organized a very efficient system for handling registrations for the Convention for those who have properly filled out and sent in their registration cards and envelope reserving space at the various dinners, barbecue and Convention Banquet. If you have not already sent in your registration card and envelope, and hotel reservation blank, please be sure to do so at once, and enclose check for the amount to cover registration, barbecue picnic and fish fry, and other dinners you will attend during the Convention.

It is essential that we know in advance approximately how many will attend the different dinners and banquets in order that adequate preparation for your comfort may be made. Please do your part by letting us know in advance what dinners, etc., you will want to attend.

Unavoidable cancellations may be made up to Monday, October 18, 1948 by notifying L. E. Whittelsey, Augusta Chemical Company, P. O. Box 660, Augusta, Georgia.

The Reception Committee will be looking forward to greeting you in Augusta, Georgia at the National Convention.

—♦ ♦—

Banquet Committee for Augusta Convention

THE Banquet Committee, headed by Jack Anderson of Peerless Woolen Mills, Chairman, and assisted by the following members, have pondered over many delicious menus which will delight the most fastidious epicure attending the National Convention:

George Small, *Assistant Chairman,*
National Oil Products Company, Augusta, Georgia.
E. H. Dobbins,
The Trion Company, Trion, Georgia.
O. G. Edwards,
Chattanooga, Tennessee.
Robert N. Foster,
Monsanto Chemical Company, Anniston, Alabama.
Clyde J. Horn,
Spindale Mills, Spindale, North Carolina.
P. E. Smith,
Riegel Textile Corp., Ware Shoals Division, Ware Shoals, South Carolina.
Dave E. Truax,
Stein Hall & Co., Inc., Charlotte, North Carolina.
Dan Rion,
Nopco Chemical Company, Trion, North Carolina.
C. Harrell Asbury,
E. I. duPont de Nemours & Co., Inc., Chattanooga, Tennessee.
Ernest V. Helms,
Geigy Company, Inc., Chattanooga, Tennessee.
John O. Sweitzer,
Scholler Brothers, Inc., Chattanooga, Tennessee.
Alexander D. Campbell,
Althouse Chemical Company, Chattanooga, Tennessee.
Glenn R. Bellamy,
Ciba Company, Inc., Chattanooga, Tennessee.

JACK ANDERSON
Chairman, Banquet Committee

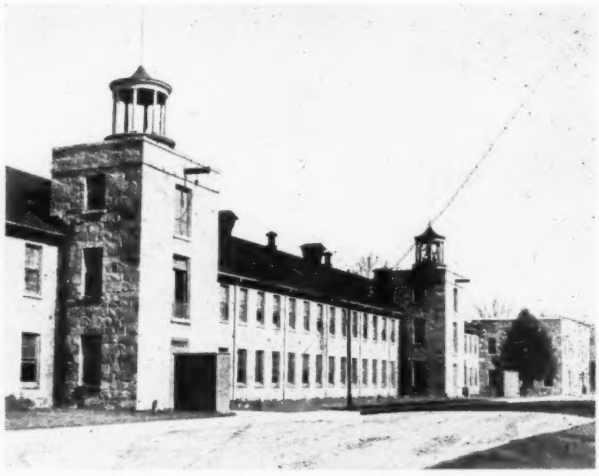
Jack Anderson first saw the light of day in the small country town of Inskip, Tennessee, which is about five miles out of Knoxville. Since Jack left Inskip, the town has grown so small that they have the welcome and the parting signs back to back on the same post. Jack was born into a family of railroaders. His father and six brothers were all connected with the railroad and Jack, himself, says that he spent ten years working on the railroad.

Jack lived in Knoxville until 1928 and then moved to Chattanooga where he was employed for two years as an accountant by Leonard Barker Company. He was later connected with the First National Bank in Chattanooga for three years as Assistant Credit Manager. Jack joined the Peerless Woolen Mills as production man in 1933 and two years later became Purchasing Agent and Wool Buyer.

Jack has no college degrees that he boasts of. He covered two years of high school and took a correspondence course in accounting with LaSalle University of Chicago.

A son, eleven years old, and a daughter, fifteen years old, live with Jack and his mother in Chattanooga. He is very proud of his two children and his eighty-two years old mother who is head of the household. His hobby is golf and he is a member of the Chattanooga Golf and Country Club.

Mr. Anderson served as Chairman of the South Central Section for several terms and was very instrumental in building up the activities of the section. The Convention is fortunate in having such a capable and genial host as Chairman of the Banquet Commiteee.



Photo, Courtesy, Augusta Chamber of Commerce

South's Oldest Cotton Mill.

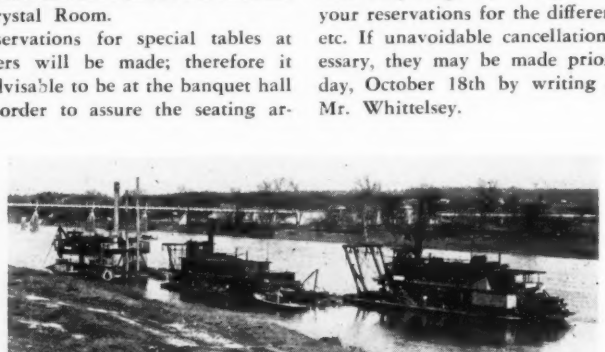
Founded in 1845 by William Gregg, early crusader for social betterment and industrial expansion in the South, the Graniteville Company cotton mill has stood in use for over a century and it is the oldest cotton mill in the South operating under its original charter. The mill is made of native granite. A few of the workers' two-story, English-type cottages built in the 1840's today are historic landmarks linking the community to its colorful past.

It is doubtful if any of our previous conventions have had as much attention paid to the selection and serving of different luncheons, dinners, and banquets as is being given to the Augusta Convention.

Special buffet luncheons will be served in the Crystal Room of the Sheraton Bon Air from 12:30 P.M. to 2:00 P.M. on Tuesday, October 21st and Saturday, October 23rd to accommodate the attendants in the most efficient manner. Tickets for these buffet luncheons may be obtained at the registration desk and at the entrance to the Crystal Room.

No reservations for special tables at the dinners will be made; therefore it will be advisable to be at the banquet hall early in order to assure the seating arrangements that you and your friends may desire. The banquet will be served on time and in a most efficient manner, and the specehes which follow are streamlined and designed to be of extreme interest and pleasure to you.

Take advantage of these efforts that have been made for your pleasure and comfort by completing your registration cards and envelopes showing the dinners and other functions that you desire to attend. Send your check to L. E. Whittelsey, Augusta Chemical Company, P. O. Box 660, Augusta, Georgia along with your reservations for the different dinners, etc. If unavoidable cancellations are necessary, they may be made prior to Monday, October 18th by writing or wiring Mr. Whittelsey.



Photo, Courtesy, Augusta Chamber of Commerce

Dredging Savannah River for Nine Foot Channel

Robert J. Quigg,
R. J. Quigg Chemical Company, Knoxville, Tennesse.
R. Wilburn Freeze,
American Aniline Products, Inc., Chattanooga, Tennessee.

TRADE NOTES • NEW PRODUCTS

Correction

Re: Who Me? . . . Pointers in Job Management

In the review of the above-titled book on page 508 of our July 26th issue the name of the publisher was inadvertently omitted. The publisher is the National Foreman's Institute, Deep River, Connecticut.

• Foundation Passes Goal

The New England Textile Foundation, 68 South Main Street, Providence, R. I., announces that it has passed its goal of $250,000.00 in its second campaign for the benefit of the four New England textile schools, Abbot Stevens, Vice President of M. T. Stevens & Sons Co., Division of J. P. Stevens & Company, North Andover, Mass., was General Campaign Chairman.

334 firms in the textile and related industries have contributed a total of $253,890.00, making the average gift $760.00. The total includes $2,000.00 given direct to Lowell Textile Institute and $3,500.00 given direct to the Textile School of Rhode Island School of Design. All other gifts were made through the Foundation.

This second campaign is part of a four year program to raise a grand total of about $1,000,000.00 for the textile schools in New England. After the fourth campaign, it is anticipated that the annual need of the schools for assistance will be considerably less than at present.

Principal as well as interest is being used by the Foundation to augment faculty salaries which are limited by statute and otherwise, to modernize and round out school equipment, and to attract the best students by means of scholarships. About $150,000.00 was donated last year for such purposes, and probably considerably more than that will be donated this year.

• Price Reduction on Ultrapone S

Ultra Chemical Works, Inc., Paterson, New Jersey, manufacturers of a wide variety of basic chemical products, announces the third price reduction this year on Ultrapone S (97-100% active amine condensate). Improved manufacturing facilities, plus steadily mounting sales have made it possible to reduce the cost of this material to the user almost 20%.

Ultrapone S Liquid is a detergent, emulsifier, and foaming agent widely used in textile processing, cosmetic manufacturing, rug cleaning, industrial cleaning, and other fields.

Ultrapone S is a slightly alkaline organic surface active agent, soluble in water in all proportions. In solution it has considerable body and reaches a maximum viscosity at 8-10%.

Although considered a non-ionic compound, solutions of Ultrapone S exhibit anionic properties at a pH above 7 and cationic properties below 7. Solutions, even in low concentrations, are said to be good detergents in alkaline solutions and possess high wetting power and fair foaming power at any pH. Pyro or polyphosphate solutions greatly increase the detergency of Ultrapone S.

• American Aniline, Southern Manager

James Harvey Orr (above) was promoted to Southern Manager of American Aniline Products, Inc., according to an announcement made at the Company's Main Office recently.

Mr. Orr, a resident of Charlotte, N. C., had been a salesman in that area for American Aniline Products, Inc., for the last fifteen years. In his new duties he will supervise the company's sales efforts in Virginia, North and South Carolina, Alabama, Georgia and Tennessee.

• Research Director, National Starch

Dr. Carlyle G. Caldwell, a member of the research staff since 1940, has been appointed research director of National Starch Products Inc., New York.

A native of Little Rock, Arkansas, Dr. Caldwell attended Iowa State College graduating in 1936, and received a Ph.D. degree in chemistry from the same institution in 1940.

A recognized authority on the modification and application of starch products, Dr. Caldwell will continue to direct the development of Amioca, a waxy corn starch, as well as the extensive starch, synthetic polymer, and adhesives research program of the parent Company and its National Adhesives Division.

• A Tale of Two Trees

The American Dyewood Company has commemorated its 150th anniversary by the publication of a privately printed book entitled "A Tale of Two Trees—Logwood and Quebracho" by Joseph E. Stevens.

Following a brief history of logwood itself the book traces the development of the company back to William Partridge who began the manufacture of cut logwood in 1798 in Greenwich Village, then a suburb of New York City. The firm later became William Partridge & Son and moved to Gravesend Bay in outer New York harbor where they built a tide mill and installed equipment capable of turning out not only cut dyewoods but concentrated extracts as well. With the passing of Partridge & Son, the enterprise was transferrd to Brooklyn on the East River under the new name of New York Dyewood Mills, headed by James Harway who acquired the Partridge interests. Both chips and concentrated liquors were supplied to the trade. In 1872 Harway sold control to a new organization, the New York Dyewood Extract and Chemical Co., and became its first president. He was succeeded as president in 1875 by W. R. Renwick who died in 1883 and Joseph C. Baldwin became president. In 1884 plant facilities were considerably enlarged and a new office building at 55 Beekman Street, New York, was secured.

In 1892 a merger was effected with the Boston Dyewood and Chemical Company and a new organization, the New York and Boston Dyewood Company, was formed. New York was chosen for the main headquarters and the Boston quarters became a branch office. Joseph C. Baldwin became president of the new company and Charles E. Thayer, formerly president of the Boston company, became vice-president. Joseph C. Stevens, treasurer of the Boston company, retained that position. At this time the business of the Atlantic Dyewood Company was

taken over. New headquarters were later established at 156 William Street in New York. In 1905 the Boston plant was closed and some of the equipment moved to New York.

The book continues with a story of the development of the use of quebracho extract in which the Dyewood Company had considerable interest. The remarkable growth in the production of quebracho at the Brooklyn plant resulted in a merger with the Sharpless Dyewood Extract Company of Philadelphia who had a fine plant on the Delaware River in Chester, Pennsylvania. In 1904 a new organization called the American Dyewood Company was formed to take over the logwood end of the New York and Boston Dyewood Company's activities and the plant and business of the Sharpless company. John W. Pepper was the first president. Within a short time the output of the plant at Chester was doubled. The New York Tanning Extract Company was formed to take over the Brooklyn plant and interest in the quebracho business. In 1905 Percival Thomas became president of the American Dyewood Company. He was succeeded in 1927 by DeWitt Clinton Jones, Jr. When he died in 1931 he was succeeded by Joseph C. Baldwin, Jr.

In 1924 American Dyewood took over the manufacture and sale of the products of Oakes Manufacturing Company, including the well-known "Oakes' Hematine". In 1925 the New York Color & Chemical Company became a division of American Dyewood, and the head of New York Color, Paul R. Mackinney, became vice-president of American Dyewood. He succeeded Joseph C. Baldwin, Jr. as president in 1936, which office he still holds. The output of the New York Color division includes a constantly increasing production of coal tar dyes, synthetic tanning materials and chemical specialties.

The management of the American Dyewood Company now consists of the following:

President: Paul R. Mackinney.
Vice-president: Harry R. Tisdale.
Vice-president: Bertram R. Neice.
Treasurer: Ernest W. Picker.
Asst. Treasurer and Secretary: Fred C. Fuller.
Asst. Secretary: Frank B. Grimshaw.

• Promoted to Brigadier General

The Department of the Army, Washington, D. C., announced recently the recess appointment to the temporary grade of Brigadier General, with presidential approval and subject to confirmation by the U. S. Senate, of Colonel L. O. Grice, Commanding Officer of the New York Quartermaster Purchasing Office, 111 East 16th Street, New York, N. Y., effective 25 August, 1948.

General Grice has been in command of the New York Quartermaster Purchasing Office since taking over the assignment in November 1946. He has been an officer in the Quartermaster Corps since August 1917, at which time he entered the army during the First World War.

During the early part of World War II General Grice was in charge of the Clothing Branch, and later of the Standardization (Research and Development) Branch, Supply Division, Office of The Quartermaster General. He was QM Supply Officer, Utah Quartermaster Depot, from August 1942 to July 1945. He also commanded ASF Depots at Savannah, Ga., and Shreveport, La., and the 51st QM Base Depot in Honolulu.

General Grice holds the Legion of Merit Medal and the Commendation Ribbon with two clusters.

• Joins Votator Division

John E. Slaughter, vice president of The Girdler Corporation, Louisville, Ky., has announced that C. E. McMichael, (above), widely known food technologist, has joined the Fats & Oil Section of the firm's Votator Division. He will be associated with A. E. Bailey, who heads up that section of the Votator organization.

From 1941 until June 1948, when he resigned to become a member of the Votator staff, he was general superintendent of Durkee Famous Foods' plant in Berkeley, Cal.

Mr. McMichael majored in chemistry at Miami University, Oxford, Ohio. In 1928, he began his business career with Procter & Gamble Co., at Ivorydale, Ohio. He spent two years in inedible fat hardening, and in catalyst making and recovery. Later, he was in the copra mill, then was assigned to the chemical division. After a wide variety of specialized work, he went to the service department, where he inaugurated the training program for operators and skilled technicians. Later he was made chemical supervisor of the edible division, where his chief responsibility was quality control throughout all processes.

• Joins Sindar Corp.

R. E. Horsey, sales manager of Sindar Corporation of New York, announces the addition to its sales staff of R. J. McKeefery, who will handle the sale of industrial aromatics, antiseptics, germicides, mildewcides, preservatives, stabilizers and other products in New York State, New Jersey, Connecticut, Rhode Island, and Vermont. Mr. McKeefery has been with Sindar and its associate company, Givaudan-Delawanna, Inc. since August 1946. He has been engaged formerly in the technical sales service. Previous to his employment with Givaudan, he was associated with *Oil, Paint and Drug Reporter.* He was with the Signal Corps of the United States Army from 1942 to 1945.

• Booklet on Water Demineralizers

The 26-page booklet, "Filt-R-Stil Demineralizers Deliver Low-Cost Chemical Equivalent of Distilled Water," has just been reissued in a revised edition by American Cyanamid Company. This two-color, profusely illustrated booklet, first issued about a year ago, cites the advantages of demineralized water over distilled water, describes briefly the chemical and mechanical principals of demineralization by ion exchange, and gives data on calculating costs for demineralizing various raw waters. In this revised edition, the pages devoted to cataloging the standard demineralizers offered by the Company have been revised to include the latest changes in specifications, models available, and performance data for each of the units.

Copies of the revised booklet are available without charge from American Cyanamid Company, Ion Exchange Products Department, 30 Rockefeller Plaza, New York 20, New York.

• National Starch Appointments

Lester Klempner has been appointed field manager of the Mid-Western Division of National Starch Products Inc. His headquarters will be at the Chicago office.

A graduate of the Wharton School of the University of Pennsylvania in 1933, he was also captain of the basketball team during his senior year.

Joining National Adhesives, Philadelphia, in January of 1935, he was later transferred to Baltimore and remained there as sales representative until he entered the Service in 1942. In January, 1946, after being discharged from the Navy as a lieutenant commander in the Supply Corps, Mr. Klempner organized the Atlanta Branch Office of National Starch Products, and its affiliate, National Adhesives.

Fred Eastwood who has represented National at Memphis, Tenn., has been appointed to take charge of sales in Atlanta.

John Noone who has been working out of the Philadelphia Office, will now be located at Memphis.

• Eastern Color Appointment

Michael Shepard, President of Eastern Color & Chemical Co. of Providence, R. I. announces the appointment of Iver W. Fallstrom as Vice-President and Technical Director in charge of Sales and Service.

Mr. Fallstrom will direct sales and applications to the textile industry. He is well qualified for this assignment having served as Director of Development and Application for Arnold Hoffman & Co., Inc. for the past 10 years. Prior to that time, he was Research Chemist for Hercules Powder Co. for 5 years; Chemist with Sayles Finishing Plants on special finishing development, and for 5 years was Chief Chemist for The Aspinook Corporation. A graduate of Clark University and Massachusetts Institute of Technology, Mr. Fallstrom has had wide experience in the development and application of resins, permanent finishes and special processes used in the textile industries. He is a member of the American Association of Textile Chemists and Colorists and at one time served as Secretary of the Rhode Island section.

• Opening for Physicist

There is an opening for a Physicist (Electronics background desired), $4479.60 per annum at the Naval Clothing Depot, 29th Street and 3rd Avenue, Brooklyn 32, N. Y. This civil service position is in the Depot's Textile Development Division. Persons interested should contact the Industrial Relations Office, Naval Clothing Depot, 29th Street and 3rd Avenue, Brooklyn 32, N. Y.

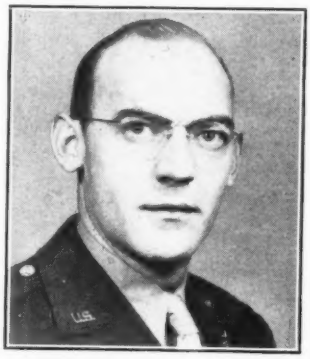
• Tanker Facilities for Celanese Chemicals

Celanese Corporation of America announces the completion of tanker facilities for the shipment of bulk chemicals from its chemical plant at Bishop, Texas to the Eastern seaboard. This tanker service combines the most modern marine equipment with new chemical control technique and represents the first tanker movement of bulk formaldehyde in the country.

Continuous service will be maintained between Corpus Christi, Texas, and New Haven, Connecticut. Between 50 and 60 million pounds of chemicals are expected to go to the East by the new water route every year. The Corporation will continue to use railway tank cars for chemical shipments, principally to the West Coast.

Large storage tanks have been installed at New Haven and Corpus Christi. The New Haven terminal alone will have storage facilities for more than 7,000,000 pounds of both uninhibited and inhibited formaldehyde. Through this terminal the Corporation will supply customers within a 250 mile radius by using a fleet of insulated trucks.

• Research Director, Amalgamated Chemical



Hillary Robinette, Jr., (above), has been named research director of Amalgamated Chemical Corp., Philadelphia, where he will head up an expanded consulting service for the textile industry.

Mr. Robinette has been with Publicker Industries, Inc., Philadelphia, in the new products division since his release from active military service in December, 1945.

During World War II, Mr. Robinette served with the Textile Section of the Research and Development Branch, Military Planning Division, Office of the Quartermaster General. He was awarded the Army Commendation Ribbon for his work on protective clothing in coordination with the Chemical Warfare Service. This work included the development of finishes for protection against chemical agents and the development of water impedient finishes for tents and clothing.

Prior to the war, Mr. Robinette was in the sales promotion division of Commercial Solvents Corporation, Terre Haute, Ind., working on textile, paper and leather goods. He was president of W. H. & F. Jordan Manufacturing Co., Philadelphia, textile chemicals, from 1939-40 and before that spent six years in the research department of Rohm & Haas, Philadelphia, working on textile chemicals.

Mr. Robinette is a member of the advisory sub-committee on leather of the Committee on Quartermaster Problems of the National Research Council. He has presented a number of papers before technical associations and has been granted a number of patents in the textile chemical field.

He is a member of the American Chemical Society, American Assocation for the Advancement of Science, Academy of Sciences, American Association of Textile Chemists and Colorists, Society of the Chemical Industry, Chemists Club of New York, Organic Chemists Club of Philadelphia, Quartermaster Association.

Mr. Robinette is a native Philadelphian and a graduate in chemistry from Temple University.

• Emery Industries Appointments

John M. Archiable has been appointed Works Manager for Emery Industries, Inc., Cincinnati, according to an announcement made this week. He has been with the company since 1930 when he was graduated from the University of Cincinnati with the degree of chemical engineer. Until his present promotion, he was plant superintendent.

Succeeding Mr. Archiable as Plant Superintendent is Robert Bruch, also a chemical engineering graduate of the University of Cincinnati. Mr. Bruch's assistant will be Milton Shear, associated with Emery for twenty years.

The three men supervise all manufacturing operations at Emery's Ivorydale plant which includes the chemical, Twitchell, and plastolein divisions.

• Orlon

The Du Pont Company has adopted the trade-mark "Orlon" for a synthetic textile fiber on which it has been conducting research for several years, and which has previously been known only as Fiber A.

Technically the material is called a polyacrylonitrile fiber. Quantities required for the development work are being made in a laboratory-scale pilot plant.

"Orlon" acrylic fiber offers some properties which the company said are outstanding contributions to the textile industry. Its resistance to degradation by sunlight commends it for use in awnings, automobile tops, and other outdoor uses.

Its resistance to chemical attack, particularly by acids, and its ability to withstand elevated temperatures fit it for use in filtration applications and chemical-resistant cordage and threads.

The aesthetic qualities of fabrics made of "Orlon" are demonstrated in household curtains which are easily laundered and resist deterioration by sunlight and atmospheric gases. The fabrics have a warm hand and are supple.

The development originated in the Pioneering Research Section of the Rayon Department in 1940 when work was begun on vinyl type compounds and their possibilities for fibers and films.

Distribution is being handled by C. D. Wenrich in the New York office of the Du Pont Company.

• LTI Instructors

The appointment of six new instructors to the faculty of the Lowell Textile Institute was announced recently by President Kenneth R. Fox. The appointments were made necessary by the constantly increasing student enrollment which will total above 625 this year, nearly 100 more than last year's record breaking figure, according to President Fox.

Dr. Ronald E. Glegg, recently of Fredericton, New Brunswick, was appointed to the chemistry department as assistant professor of organic chemistry. Dr. Glegg received his bachelors degree with first class honors from McGill University and his doctor of philosophy degree in chemistry from the same university. He has done research work on cellulose under the direction of world-famed cellulose chemist Dr. Clifford B. Purves and for the past two years has been assistant professor of organic chemistry at the University of New Brunswick.

Martin J. Lydon of Lowell was appointed instructor in the newly created department of social sciences. This is Mr. Lydon's second appointment to the Institute faculty as he served during the academic year 1946-1947 before taking a leave of absence. Mr. Lydon received his A. B. degree *cum laude* from Harvard University where he was the recipient of numerous prizes and scholarships. He received his A. M. degree from Harvard in the social sciences and has taught sociology at Palm Beach Junior College. Besides teaching sociology at the Institute, he will act as assistant to Dean Simon Williams in instituting a program of vocational guidance.

Stuart L. Mandell of Haverhill was also made an instructor in the department of social sciences. He receivd his bachelor's degree in economics from Brooklyn College and his master's degree in business administration from Syracuse University. He has taught marketing and foreign trade at Syracuse besides having industrial experience with several textile firms.

Robert C. Gray of North Andover was appointed instructor in woolen and worsted design. Mr. Gray studied design at Lowell Textile and has had 40 years experience as head designer in many of the largest woolen and worsted mills in that area, including Wood Worsted Mill, Arlington Mills, Washington Mills, Sanford Mills and Pacific Mills.

Philip A. Hall of Westmoreland Depot, New Hampshire, was appointed to the engineering department as an instructor in physics. Mr. Hall received his bachelor's degree from the University of New Hampshire and has done advanced work at both New Hampshire and the University of Denver. He has had five years' industrial experience with Factory Insurance Associates and the General Electric Company.

Adolph Katz of Roxbury was also appointed to the engineering department s an instructor in mechanical engineering. Mr. Katz is an honor graduate of Northeastern University where he received his bachelor's degree in mechanical engineering. He holds a master's degree in the same subject from Harvard University and has served as an instructor in engineering subjects at Northeastern. He has had several years industrial experience in drafting and production work with the Hesse Machine and Manufacturing Company.

• American Aniline Appointment

The addition of Carroll F. Martin, Jr., (above) to the Southern Sales Staff of American Aniline Products, Inc., was recently announced at the Main Office by G. L. Armour, Executive Vice-President.

Mr. Martin, a graduate of North Carolina State College, had previously been employed as a demonstrator-technician in the company's Charlotte Office.

His new position will bring him in contact with Textile Mills both in North Carolina and South Carolina, working out of the company's Charlotte Office.

• National Starch Exhibit

National Starch Products Inc. have planned a unique exhibit at the important Southern Textile Exposition to be held at Textile Hall, Greenville, South Carolina, October 4th to 9th, 1948. The background will be in the form of a flow chart indicating the important steps in the manufacture of National's quality corn starch products. This exhibit undoubtedly will be of considerable interest to all textile manufacturers, and also to the many textile students who will attend this exposition.

In attendance at National's Booth No. 444 will be:

Frank Greenwall, President.

Chester A. Gage, V.P. in Charge of Sales.

J. F. Fitzgerald, Manager, Starch Sales.

Lester E. Klempner, Manager, Southeastern Division.

Herbert C. Olsen, Chief Textile Chemist.

W. J. Bonner, Southern Textile Dept.

H. F. Taylor, Jr., Southern Textile Dept.

• Ben P. Steele Company

Announcement has been made that Ben P. Steele, until recently in charge of the export department of The Pennsalt Mfg. Company's former New York offices, has organized the Ben P. Steele Company, 62 William Street, New York 5, N. Y. Industrial and agricultural chemicals and insecticides will be featured for export and domestic use.

• Booklet on Parlon

A revised edition of a technical booklet on Parlon, Hercules Powder Company's chlorinated rubber, now is available. The revised edition contains considerable new information on the use of Parlon in protective coatings, printing inks, paper coatings, textile finishes, and many other applications.

Parlon is said to be an excellent fortifier for long-to-medium oil length alkyd enamels. The addition of Parlon gives a faster drying time, and in the case of forced-dried or baked enamels, develops harder films which may be handled sooner.

Charts showing how Parlon speeds the drying time of enamels, and photographs illustrating the results of drying-time tests are included in the new booklet.

A section on finishes for alkaline surfaces includes photographs comparing the

corrosion resistance of Parlon paint with other paints and illustrating the alkali resistance of Parlon paints. Examples of acid- and alkali-resistant starting formulas also are given.

Parlon also is being used as a film-forming base for moisture vaporproof coatings for paper and paperboard. To illustrate Parlon paper lacquer, the cover of the booklet is coated with a Parlon-base lacquer.

• General Releases

General Dyestuff Corp., 435 Hudson Street, New York 14, N. Y. announces release of circulars describing the following products:

Azo Phloxine GA Extra Conc. CF*—a very level dyeing acid dyestuff which produces very bright bluish shades of red said to possess good fastness to light. These properties, together with high tinctorial strength and very good money value, are said to account for the widespread use of this product in dyeing women's dress goods, hats, yarns, etc. In combination with Fast Light Yellow 3GX-CF and Alizarine Blue SAP-CF or other level dyeing acid colors, it is commonly used for dyeing mode shades as well as dark browns, olives, etc. The product is sufficiently free from copper and manganese to be suitable for the dyeing of material to be rubberized. Acetate rayon effects are left unstained. The solubility is good. Circular G-519.

Chromoxane Brilliant Violet REA-CF*—a new homogeneous mordant dyestuff which, like other Chromoxane brands, is said to be characterized by a degree of brilliancy unusual among mordant dyes as well as by good to very good fastness to wet and mill processing. It can be applied by the top chrome and monochrome (chromate) methods. It is primarily recommended by the manufacturers for brilliant violet shades, also for effects and for brightening navy blue shades on piece goods, yarn, slubbing and raw stock. It is stated that the very good dischargeability of this product permits its use for the production of discharge prints fast to washing. Circular G-530.

Wool Green BSNA Extra Conc.—an acid dye which produces fairly bright bluish green shades on wool. It is used when an extremely level dyeing, inexpensive product is desired with no special fastness requirements particularly in combination shades and as a shading color. Since it has fairly good affinity from a neutral bath, it is useful for coloring the wool in union dyeing. Effect threads of acetate rayon, viscose or cotton are left practically unstained. The product is said to possess good solubility and to be non-dusting. Circular G-531.

* Reg. U. S. Pat. Off.

• Heyden Chemical Appointment

Heyden Chemical Corporation recently announced appointment of Charles V. Douglas (above), as assistant to the vice-president in charge of sales.

Mr. Douglas, who has been associated with Diamond Alkali Company and its subsidiaries for 25 years, will assist vice-President J. P. Remensnyder.

Before joining Heyden, Mr. Douglas was New York District Manager for Diamond Alkali. Prior to that he was for nine years president of a wholly-owned subsidiary, the George Chemical Company.

Mr. Douglas is treasurer of the Salesmen's Association of the American Chemical Industry and is a member of the Chemists' Club of New York.

Diazo Brilliant Scarlet GGA Extra CF—a new homogeneous diazo dyestuff. When applied to cotton, rayon or other vegetable fibers and developed with Developer AMS or with beta naphthol, it produces bright scarlet shades said to possess better washfastness than is obtainable with other diazo scarlets. The wash fastness is fairly good to good on both cotton and rayon. The lightfastness is poor to moderate on cotton and moderate on rayon. Aftertreatment with urea formaldehyde resin finish does not affect the lightfastness and aftertreatment with melamine resin finish affects the light fastness only very slightly. The product exhausts rapidly at the boil and at a slow rate if applied at 150° F. in the presence of salt and levels only moderately well once it has drawn onto the fiber. The product should be applied with a small amount of salt at the start and the temperature raised slowly. Additional salt may then be added if required. The product is said to be sufficiently free from copper and manganese to be suitable for material to be rubberized. It is non-dusting and is soluble at the rate of 2 ounces per gallon. Acetate rayon effects are stained distinctly. Animal fiber and nylon are stained heavily. Dead cotton is well covered. Circular G-540.

Katigen Yellow GA-CF*—a sulfur dyestuff with good tinctorial value said to possess fairly good light and wet fastness. It is used for dyeing cotton and rayon yarn, piece goods or raw stock in all types of machinery. Its solubility of 12 ounces per gallon makes the product especially suitable for package dyeing. It is non-dusting and is sufficiently free from copper and manganese to be suitable for dyeing material which is to be rubberized. Circular G-548.

• Emery Industries Appointments

Robert F. Brown is the new Chemical Sales Manager of Emery Industries, Inc., the Cincinnati chemical manufacturer announced this week.

He succeeds C. W. Sampson, who was named to head the newly formed Export Department of the company. Mr. Brown handles all Emery domestic sales of fatty acids, fatty acid derivatives, and Twitchell products. His headquarters will be in Emery's home office, 4206-19 Carew Tower, Cincinnati.

Emery also announced the appointment of Robert A. Behrman to its sales service department. Mr. Behrman, who holds a chemical degree from Iowa State College, recently completed his graduate work in the Harvard School of Business Administration.

• Thickener for Latex

The development of a synthetic, non-creaming thickener for natural and synthetic latex in the laboratories of American Polymer Corporation, Peabody, Mass. has been announced. Known as Polyco 296, this new product is based upon acrylate copolymers and can be diluted with hot or cold water to provide higher viscosities at lower concentrations than most commercial thickeners.

Because of its unique chemical composition, Polyco 296 is not subjected to the rotting, scouring and mildewing usually encountered with naturally derived gums, proteins and starches. It is stated that it will not support bacteria growth, is non-oxidizing, non-yellowing, stable in the presence of heat, and resists oils, fats, greases and aliphatic solvents.

Polyco 296 is recommended by the manufacturers as an additive to thicken latices and resin emulsions for textile printing, pastes and sizes. It also finds wide use in the manufacture of lubricating greases, dipping, saturating and coating operations; as a flexible film former

to render paper, leather and plastic films acid and oil resistant; and as a protective colloid for many types of emulsions and dispersions.

Additional uses are covered in a new data sheet, P-6 available upon request to American Polymer Corporation, 101 Foster Street, Peabody, Mass.

• New Industrial Oil Plant

Operations will begin this fall in a new industrial oil processing plant at Hammond, Indiana, that will add new sources of glycerides and fatty acids to the industrial oil production of Swift & Company, according to E. A. Moss, vice president.

The new plant is located on part of a 70 acre tract at 165th Street and Indianapolis Boulevard, which is being set aside by the company for further development of technical products facilities. Eight buildings and a tank farm are included in the construction.

This new construction will include units to carry out three processes, namely, solvent crystalization, solvent fractionation, and fat splitting.

By these processes, integrally operated for the first time in this new plant, Swift & Company will produce improved industrial oil products of uniformity in quality, and in quantities sufficient to fill the requirements of mass production industries. At the same time, the company can more fully utilize the raw materials available from its many plants.

Products from the plant will provide raw materials to industries that manufacture such items as cosmetics and toilet creams, soaps, floor waxes and polish, linoleum, phonograph records, candles, shoe polish, rubber products, paint, textiles, wallpaper, printing inks, cleaning and waterproofing agents, leather dressing, buffing and lubricating compounds, wire drawing compounds, insecticides and cutting oil.

Research into new and improved products and new uses for these products will be a vital part of the new operation and will be carried on in an experimental pilot plant. Research also will continue in Swift & Company's central research laboratories.

The present production of industrial oil by Swift & Company is obtained almost entirely from glycerides of animal origin. However, the new Hammond plant will also allow volume production of glycerides and fatty acids from vegetable and marine oils.

• Mathieson Vice-President

Dr. D. P. Morgan, who recently joined Mathieson Chemical Corporation as Administrator of Research and Development, has been appointed Vice President in charge of the Development Department, it has been announced by Thomas S. Nichols, Mathieson president and Board chairman.

Before coming to Mathieson, Dr. Morgan was in charge of chemical market research and development at W. R. Grace and Company. During the last several years of World War II, he served as Director of the Chemicals Bureau of the War Production Board. Prior to that he was associated with Scudder, Stevens and Clark as a chemical consultant. Dr. Morgan is a graduate of Harvard University and received his Ph. D. in chemistry from Columbia University.

Dr. Morgan is a fellow of the American Institute of Chemists and a member of many organizations, including the American Chemical Society, the American Institute of Chemical Engineers and Sigma Xi, honorary scientific society.

• Fortieth Anniversary

September 1948 marks the fortieth anniversary of Herbert H. Hatch (above), Director of Hatch Textile Research, in the professional branch of the New York textile industry. He first entered the field with his father in 1908, as public textile adjuster, a business which was established on Canal Street in 1830. In 1926, Mr Hatch opened the present textile testing laboratory with the late J. J. Reutlinger, and in 1937 took over the entire business operating under the present name at 26 East 26th Street. The service is used by manufacturers, dyers, converters and retailers. Among the retailers are some of the well-known stores in New York and Broooklyn.

• PTI Appointments

The Philadelphia Textile Institute through B. W. Hayward, Director, has announced the following staff additions and advancements:

Donald B. Partridge of Salem, Mass., who has been active in public and private schools in New England has been appointed to fill a newly created post, admissions and placement officer. Mr. Partridge developed one of the first Veterans High School programs while at Sanford, Maine. He has attended and has degrees from Bates and Harvard.

The worsted department has obtained the services of George K. Erben, formerly vice-president and treasurer of the Erben-Harding Company. Mr. Erban has also served as superintendent of the Irving Worsted Company of Chester, Penna., and as superintendent of the worsted yarn division of James Lees and Sons Company, of Bridgeport, Penna. Mr. Erben has had a distinguished career in the textile industry. Starting at $10.00 a week in 1906 he rose to become vice-president at a salary of $25,000. He served as Captain in the first World War, has been a bank director, school committee member, and was for nine years a member of the Board of Adjustment of the Zoning Ordinance for Radnor Township.

Paul Siminuk, formerly with Continental Mills, has been appointed head of the power weaving department. Mr. Siminuk has been on leave of absence to study recent developments in weaving with Draper Corporation at Hopedale, Mass. As a new assistant in the weaving department Mr. Siminuk has secured Stanley Barker formerly with E. W. Twitchell Company and Assistant Superintendent at Van Kuyper Woolen Mills. Mr. Barker has been with Craftex Mills and has served as consultant to several textile corporations on plastic cloth. For mechanical assistant several men are now under consideration. Mr. Wilmer will retain his position in the department and Mr. McLain who has been with the Textile Institute since July 1910 will retire. Mr. McLain will retain his interest in the school and assist with valuable suggestions from time to time in his unofficial advisory capacity.

Additional instructors in the microscopy and chemistry departments will be announced soon when final selection is made among the candidates.

Miss E. Lillian Wyatt, Drexel School of Library Science, has been named head librarian. Since 1937 Miss Wyatt has been library assistant at Drexel Institute of Technology and she is well equipped to serve the Institute in the development of this important aspect of an educational institution. Miss Wyatt is a member of the Special Librarians Association.

William T. Clay has been appointed assistant professor of the Wool Department. Mr. Clay, a graduate Civil Engineer of

the University of Pennsyivania has served for twenty years as Manager and Treasurer of the Beswick & Clay Company and for three years as assistant manager of The Clay Company. For six years he was in the Textile Procurement Division of the Army Q.M. Corps.

In the knitting department Mr. William M. Heselton will assist Professor Naab. Mr. Heselton was for 15 years superintendent of knitting and winding in one of the largest underwear companies in the U. S. For 18 years Mr. Heselton operated his own mill making rayon, cotton underwear, robes, overcoatings, cloaking, jersey cloth, etc.

Dan Alterman, a graduate of Temple University has been named as assistant to Professor Giese in the weave formation and fabric analysis department. Mr. Alterman has had considerable experience in educational positions.

Promotions among the faculty in addition to those mentioned include Thomas Faltz to assistant professor of chemistry; William Hughes to associate professor of chemistry; Martha Jungerman to assistant professor of jacquard and color; Ercal Kaizer to assistant professor of jacquard and color; Robert Kenyon to assistant professor of dyeing; Bernard Koenig to associate professor in charge of jacquard and color; Gordon Marwine to associate professor of physics; Grant Smith to assistant professor of mathematics; Robert Stafford to assistant professor of hand weaving.

With all these advancements and additions the Philadelphia Textile Institute is still in great need of men in certain departments according to Director Hayward. In discussing the situation the Director said, "We have a larger entering class this year than anyone had ever imagined would be possible. Our maximum capacity is in our present building only about 275 students. Somehow we must have our usual high standard instructional program for 450 students. Only the fact that we expect our new building to be ready for us in the fall of 1949 permits us to take this number of students. Next year with our new building everything will be perfect. This year we need more top flight instructors so that every student will receive the high grade individual attention our students have always been given. We need desperately two men for our cotton raw materials and yarn manufacturing courses.

"Every source I know of has been explored to secure these men. Possibly the mention of our needs in textile publications will bring candidates to our attention."

• Holland W. Smith, Inc.

Establishment of a new national sales organization specializing in pigments, chemicals and resins to be known as Holland W. Smith, Inc., was announced today following the recent resignation of Mr. Smith as executive vice-president and sales manager of Thompson-Weinman and Company, New York.

The new company will maintain its New York offices in the Empire State Building and will specialize in sales and technical service to manufacturers of protective and decorative coatings, rubber, plastics, floor coverings and allied industries.

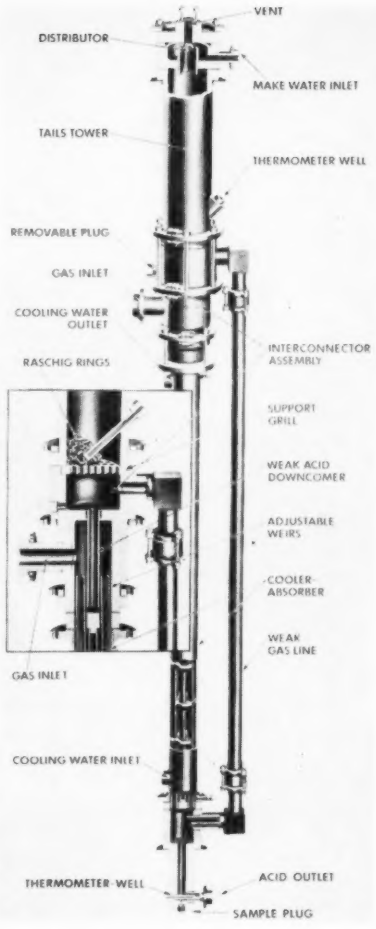
Mr. Smith as president of Holland W. Smith, Inc., will have as his associates several people well known to the trade. Other officers of the corporation are Holland W. Smith, Jr., who recently resigned as vice-president and director of Webber & Smith, Inc., Thomas N. Loser formerly assistant sales manager of Thompson-Weinman, and Miss Eloise Dabbs, previously associated with the company as sales office manager.

• "Karbate" Hydrochloric Acid Absorbers

National Carbon Company, Inc., New York, announces the availability of its Model 6B Falling-Film type hydrochloric acid absorber, as the latest addition to its line of "Karbate" equipment for processing and handling corrosive chemicals. The new absorber is a packaged unit complete with all accessories for automatic operation. The output of this unit is relatively high in that it produces 2¼ to 16 tons of acid per day, or commercial acid worth its installed cost in 14 to 37 days. The adoption of "Karbate" brand impervious graphite for the construction of absorbers takes advantage of the material's high thermal conductivity and resistance to hydrochloric acid. Impervious graphite has a thermal conductivity of between 50 and 80 BTU/sq. ft./ft./deg. F., which is from two to three times that of steel. Furthermore, its chemical inertness to hydrochloric acid solutions include all concentrations up to the boiling point and to dry or wet hydrogen chloride gases up to wall temperatures of 340 deg. F. Absorbers constructed of such materials are compact, require less upkeep and supervision, and possess long life.

In National Carbon Company's falling-film type of absorber the gas and liquid streams flow co-currently in the first stage and counter-currently in the second. It has been pronounced the most effective absorber yet made for gases in the range of 40 per cent to 100 per cent HCl by volume.

The new unit, which can make its own weight of 21 deg. Bé acid in less than 25 minutes, is only 21½ ft. high, occupies a floor space 2 ft.-11½ ins. x 4 ft.-2⅜ ins. The range of application of the Model 6B absorber can be extended by connecting two or more units in parallel to handle gas rates exceeding those of a single absorber.



The Model 6B Falling-Film type hydrochloric acid absorber shown above is a packaged unit complete with all accessories for automatic operation. The output of the unit is relatively high in that it produces 2¼ to 16 tons of acid per day, while the range of application can be extended by connecting two or more units in parallel. National Carbon Company, Inc., 60 East 42nd St., New York 17, N. Y. is the manufacturer.

• Sandoz Chicago Office

New, modern offices with complete warehouse facilities have been established in Chicago by Sandoz Chemical Works, Inc., E. Gossweiler, president, announced. Shipments to customers in the mid-western sector of the U. S. will henceforth

Entrance to new Sandoz Office in Chicago

be made directly from the Chicago warehouse with a consequent saving in time. The address of the new Sandoz office building, which is now open for service, is 552 W. Lake Street, Chicago 6, Ill.

• Clarksville Finishing Plant

On a tract of land overlooking the Roanoke River near Clarksville, Va., is a new, modernistic building which has been described as one of the most modern and largest filament rayon finishing plants in the South. On one of the windowless, brick walls is the name of this plant: "Colonial Mills, Inc., Clarksville Finishing Division." Colonial's new finishing plant was erected in Virginia's clay by C. M. Guest and Sons, textile mill builders of Anderson, S. C., and Greensboro, N. C. Bibberstein and Bowles of Charlotte, N. C., did the engineering.

The plant proper at Clarksville consists of three buildings—the dyeing and finishing plant, the steam plant, and the filter plant. All of these are of sturdy brick-steel construction. The over-all floor space in these buildings is over 130,000 square feet. This will soon be increased with a new addition now under construction.

The principal structure of the three is, of course, the dyeing and finishing plant which will process greige goods received from other segments of the Colonial system. It embraces more than 126,000 square feet of space on one floor, is artificially lighted, and has forced filtered ventilation.

About 40,000 square feet of the floor in the dyeing and finishing plant are paved with a special acid-resisting brick which protects the floor. The roof of the main building is of the flat built-up type on treated wood planks which are three inches thick. It has a vapor seal, two inches of cork insulation, and a tar, felt, and gravel roofing. Long-span roof trusses have eliminated the necessity for columns within the building.

Perhaps the outstanding feature of the dyeing and finishing plant is the drainage system in the dye house which keeps the room dry and reduces vapors to a minimum. To get these results a box culvert large enough for a man to walk through upright was constructed under the full length of the plant. Waste water from the dye becks and jigs falls into this conduit with such rapidity that it has little time to vaporize. A further check on vapors is accomplished by a vapor absorption and ventilation system which permits close humidity control. All of the ducts are made of stainless steel.

Located on the front of the main plant structure are modern offices.

Steam for the operation of the plant is generated in a five-story building north of the dyeing and finishing plant. The steam plant is equipped with three Keeler boilers, two of 500 horsepower and one of 750 horsepower. These boilers are coal-fired but may be readily converted to oil by the use of standby equipment. A dust-free ash removal system has been built into the power plant. Ashes are removed from the hoppers by a vacuum system and carried through acid and wear resisting pipes to an elevated storage silo. The ashes are then dumped into trucks through a scuttle in the bottom of the silo.

One of the determining factors in locating the new Colonial plant was the proximity of the Roanoke River which can supply a minimum flow of 700 million gallons of water a day. Water pumped from the river supplies the filtering plant, which can process 2½ million gallons of water daily. Once the water has been filtered it is stored in either the 215,000-gallon elevated tank or a clear well reservoir of 250,000 gallons capacity.

After water has been used in the dyeing and finishing process, it is returned to the waste disposal plant where all chemicals are removed before it is returned to the river. This "purification" system makes the Clarksville plant one of the first to comply with the new "end pollution" statute enacted by the Virginia legislature.

• Industrial Corrosion Control

Industrial Corrosion Control Inc., Neville Island, Pittsburgh 25, Pa., whose chief service is lining industrial equipment with anti-corrosive coatings, has been recently incorporated under the direction of R. G. Forsberg, president.

General Sales Offices for Industrial Corrosion Control, Inc. will be maintained at the Empire Bldg., Pittsburgh, Pa. with James D. Clokey, Jr., as Sales Manager. Sales representatives for Industrial Corrosion Control, Inc. are located throughout the principal cities of the United States.

The plant, located at Neville Island, Pittsburgh, maintains complete facilities to line industrial equipment with Vinyl Plastisol, a thermo setting plastic which, it is stated, has proven highly successful as a protective agent against corrosion in industry.

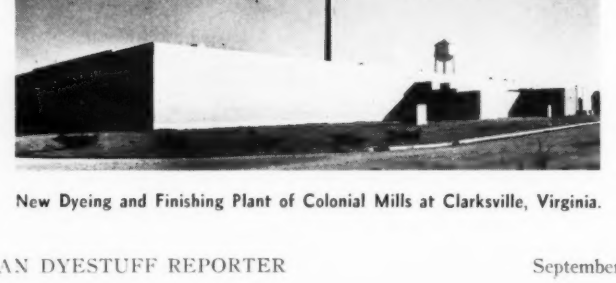
Folder F-1 gives further information.

• IRI Appointments

The Industrial Research Institute of the University of Chattanooga announces the appointment of Dr. J. Horace Coulliette as Technical Director and Dr. Irvine W. Grote as Administrative Adviser.

• Mathieson Purchase

The War Assets Administration and Mathieson Chemical Corporation have concluded an agreement for the chemical company to purchase the ammonia plant and ammonia oxidation facilities at Lake Charles, La., it was announced recently by Thomas S. Nichols, Mathieson president and chairman of the board. The purchase price was reported to be $7,063,300.



New Dyeing and Finishing Plant of Colonial Mills at Clarksville, Virginia.

Formulation of an Accelerated

Gas Fading Test for Rayon Fabrics

FRANCES KARR RAY*
PAULINE BEERY MACK
Ellen H. Richards Institute, The Pennsylvania State College

and

FREDERIC BONNET
ARTHUR H. WACHTER
American Viscose Corporation

Review of Basic Studies

A SERIES of investigations has been made with the purpose of developing an accelerated controlled gas fading test.

Reports by Ray *(4)* and by Ray, Mack and Wachter *(7)* have shown that wide variations in the time required for one test period have resulted from the use of uncontrolled test equipment, and hence that a controlled technique is highly desirable. Ray *(5)* described the development of controlled equipment for testing fastness to atmospheric gases; and Ray, Mack, Bonnet and Wachter *(8, 9)* showed the relationship of certain variables, such as temperature, humidity, type of gas and rate of gas flow upon gas fading results.

Ray and Davison *(6)* demonstrated that little difference results whether fabrics are given one pre-laundering or not, insofar as gas fading results are concerned.

In this series of reports, it was shown that the gas fading test could be greatly accelerated by the use of chemically-generated oxides of nitrogen in larger quantities than those possible with the use of combustion gases. Rates of gas flow and air flow of approximately 85 cc. and 27.6 liters per hour (measured at standard conditions), respectively, were found satisfactory. Very careful control of the rate of gas flow was found to be highly important, in order to achieve reproducible results.

Exposures at a relative humidity of 15 ± 5 per cent caused more severe fading than those at 50 ± 5 per cent, which was in the direction of greater ease of operation of the equipment. Although ease of handling the equipment favored the use of 55° C. rather than 65° C as the temperature, fading proceeded more rapidly at the higher temperature, particularly when the lower humidity was used.

A temperature of 30 ± 2° C. and a relative humidity of 30 ± 5 per cent caused more fading on some fabrics than did any of the other test conditions. It was noted, however, that a higher percentage of this fading occurred after removal of the specimens from the oven than had occurred when higher temperatures were used in the gas fading oven, which militated against satisfactory replications of results.

Variations in the type of gas showed that the use of oxides of nitrogen alone accelerated the test to a greater extent than sulfur dioxide alone or in combination with oxides of nitrogen. Moreover, keeping the total quantity of gas the same, a greater degree of color change was exhibited for greater rates of flow of gas for shorter periods of time, than for lesser rates for longer times. A major portion of the fading which occurred for representative fabrics resulted within an exposure period of 80 minutes at a rate of flow of 85 cc. per hour. This time, therefore, is suggested as the exposure time for an accelerater test.

In the above series of investigations with controlled equipment, strips of Control 1 (furnished in ribbon form by the American Association of Textile Chemists and Colorists) were exposed routinely with the test specimens; this served as a uniform measure of the comparative severity of various tests. Duplicate exposures indicated that the degree of control of test conditions provided by the equipment used in this study did not eliminate the need for a control strip in a test procedure with an established endpoint. Control strips exposed for 80 minutes therefore, were compared with colors in the Munsell Book of Color *(3)* and the matching color was selected as the end-point of the accelerated test.

The use of oxides of nitrogen under the conditions specified were found to cause fadings similar to those occurring under exposure during use, for a limited number of observations which have been completed to date. Exposures to natural atmospheric conditions of the test fabrics used in this series of studies, both in garment wearing tests and as drapes inside of windows, are in progress. It is believed that comparison of each of these specimens, after these two types of exposure during use have been completed, with specimens of the same fabrics exposed to the various test conditions will aid in the ultimate establishment of a test procedure which will predict gas fading performance in use within a high degree of accuracy. Meanwhile a tentative test is suggested which provides acceleration and control, which gives excellent reproducibility and which yields results similar to a limited number of use observations which have been completed.

Conditions Suggested for Tentative Tests

The most practical of the test conditions studied have been selected and combined in a tentative test for gas fading, subject to change following further comparisons of results with exposures under use conditions. By the adoption of the following test conditions the length of time required for prediction of fabric resistance to gas fading during wear has been reduced from approximately 16 hours to about three hours (including time for preparation of equipment for test and evacuation of gases at the close of the test); and, as stated, the results are able to be duplicated, and they simulate wear findings insofar as the latter have been completed:

Oven Temperature: 55 ± 2.5° C.

Relative Humidity: 15 ± 5 per cent.

Gas: Oxides of nitrogen.

Rate of Gas Flow: Approximately 85 cc. per hour (calculated to standard conditions of atmospheric temperature and pressure).

Rate of Air Flow: Approximately 276 liters per hour (calculated to standard conditions).

Length of Exposure Period: 80 minutes.

End-point of Test: Determined by matching the control strip with Munsell designation 7.5 P between 7/4 and 6/4.

Determinations of Color Changes:

Evaluations to be made within a definite time following exposure (3 hours suggested). Any time between two hours and

* Deceased March 1, 1947.

TABLE I

Effect of Proposed Accelerated Test on Color of Representative Rayon Fabrics

Fabrics	*Color Changes*	
	*Visual Rating (Class)**	*Unit of Color Difference***
1. Control 1	IV	61.2 ± 2.0
2. Control 2	III	13.4 ± 0.4
3. Control 3	II	4.0 ± 0.0
4. Blue Crepe	IV	13.7 ± 2.0
5. Green Crepe	IV	8.7 ± 0.3
6. Blue Gabardine	I	0.6 ± 0.5

* Classs I good
Class II fair
Class III poor
Class IV very poor

** Average of duplicate exposures.

one day after exposure would be convenient and satisfactory as a post-exposure period before evaluations are made. In this laboratory a tentative post-exposure period of 3 hours has been adopted.

It is advisable to keep the specimens in a dark place previous to evaluation of color changes.

The control strips for the 80-minute exposures should be compared with colors in the Munsell Book of Color in order to find a color which could be designated as the end-point of the unit test. The closest match was found at 7.5 P between 7/4 and 6/4. It is recommended that, in using the gas fading test unit, a strip of Control 1 (which is furnished in ribbon form by the American Association of Textile Chemists and Colorists), should be exposed with the test specimens, and the exact end-point determined by comparison of the control strip with the Munsell color standard designated above. The only alternative, in cases where an exact period is desirable, would be to make duplicate exposures under the same conditions.

Effect of Tentative Accelerated Test on Color of Representative Rayon Fabrics

The effect of 80 minutes of controlled exposure to oxides of nitrogen on the color of six representative rayon fabrics is shown in Table I, which includes both visual evaluations and changes, and units of color differences calculated from reflectometer readings according to the formula for color difference $\triangle E$ derived by Hunter *(2)*.

The degrees of fading ranged from a Class IV visual rating with 61.2 measured units of color difference for Control 1 to a Class I visual rating and 0.6 units of color difference for the Blue Gabardine. The fading which occurred on Control 1 was equal in severity to that caused during a period which fell between two and three periods of exposure according to the tentative test procedure of the American Association of Textile Chemists and Colorists *(1)*. This, in turn, represents between 18 and 27 months of exposure to air containing an average amount of nitrogen oxides, as defined by Seibert *(10)*.

Whereas the controlled conditions as outlined give more consistent and reproducible results than those obtained with any gas fading technique previously described, further investigations in this field are suggested as follows: humidity variations with non-reactive materials in the parts of the equipment with which the gas comes in contact; a further study of time intervals after exposure; more extensive comparisons of laboratory with wear tests (these are in progress at The Pennsylvania State College).

Acknowledgment

Sincere appreciation is expressed to The American Viscose Corporation, under whose sponsorship this investigation was conducted under a fellowship at The Ellen H. Richards Institute, The Pennsylvania State College.

This is the seventh in a series of reports on methodology studies related to gas fading, from the laboratories of the Ellen H. Richards Institute, sponsored by the American Viscose Corp.

Bibliography

(1) "Evaluation of Fastness To Atmospheric Fumes of Dyed Cellulose Acetate Rayon", American Dyestuff Reporter, *35*: Number 7, 174-176 (1946).

(2) Hunter, R. S., "Photoelectric Tristimulus Colorimetry With Three Filters", U. S. Department of Commerce, National Bureau of Standards, Circular C. 429 (1942).

(3) Munsell Book of Color, Standard Edition, Munsell Color Company, Inc., Baltimore, Maryland (1929).

(4) Ray, Frances Karr, "Comparison of Two Current Test Procedures for Testing Fabric Resistance to Atmospheric Gas Fading," American Dyestuff Reporter, *37*, Number 3, 76-78 (1948).

(5) Ray, Frances Karr, "Development of Controlled Equipment for Testing Fastness to Atmospheric Gases," American Dyestuff Reporter, *37*, Number 11, 355-362 (1948).

(6) Ray, Frances Karr, and Davison, Suzanne, "Effect of Laundering on Gas Fading Performance of Rayon Fabrics", American Dyestuff Reporter, *37*, Number 10, 322-325 (1948).

(7) Ray, Frances Karr, Mack, Pauline Beery; and Wachter, Arthur H., "Evaluation of Uncontrolled Gas Fading Equipment", American Dyestuff Reporter, *37*, Number 9, 287-289 (1948).

(8) Ray, Frances Karr; Mack, Pauline Beery; Bonnet, Frederic; Wachter, Arthur H., "A Comparison of the Effect on Rayon Fabrics of Various Gases Under Controlled Conditions", American Dyestuff Reporter, *37*, Number 12, 391-396 (1948).

(9) Ray, Frances Karr; Mack, Pauline Beery; Bonnet, Frederic; and Wachter, Arthur A., "A Study of the Effect of Certain Variables on Gas Fading Tests Made Under Controlled Conditions", American Dyestuff Reporter, *37*, Number 16, 529-536 (1948).

(10) Seibert, Charles A., "Atmospheric Gas Fading of Colored Acetate Rayons", Part II, American Dyestuff Reporter, *31*, Number 25, 647-649 (1942).

—♦ ♦—

Patent Digest—

(*Continued from Page* 612)

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,405,166 (Raymond Laboratories): a liquid able to disrupt disulfide groups in a hair treatment consisting of an aqueous solution of lauryl alcohol sulfate and/or thioglycolic acid, adjusted with NH_4OH to pH = 9.

U. S. Pat. 2,351,718 (Speakman): treating hair with bisulfite (pH = 4) at elevated temperature and thereafter oxidizing the remaining sulfate with hydrogen peroxide.

U. S. Pat. 2,310,687 (L. R. Bruce): relates to permanent hair waving by a treatment with sulfite, a higher (fat absorbent) alcohol, lanolin as dispersing agent and hydrolized proteins as protective agents. (For other references see the following abstract).

Shrinkproofing Wool by Mechanical Means—Abrasion A, 2, 04

U. S. Pat. 2,438,328
(Fuller's Earth Union Ltd., Speakman-Whewell, March 23, 1948)

Most of the shrinkproofing methods are based on chemical reactions, i.e., on the disruption of the cystine (disulfide) linkages and fixing thereupon the free groups by introducing more stable bridges. One of the investors, Speakman, developed theoretically and practically ways for stabilizing the wool molecule after disrupting the -S-S- linkages which are sensitive to basic agents. The present invention at-

tacks the problem under a quite different angle. Considering that the shrinkage of wool fibers is primarily due to the fact that wool fibers possess surface scales which cause *preferential migration in the direction of the root* it was concluded that this migration process could be stopped or at least slowed down by mechanically eliminating these scales. In contrast to the known processes this procedure makes the scale structure ineffective by working the fibrous material with an abrasive powder, distributed in a non aqueous medium such as oil, in which the powder is insoluble. According to an example, cloth is filled with a considerable amount of abrasive powder and thereupon impregnated with olive oil and worked for one hour in a milling machine. Thereafter the powder and the oil are removed again. In comparing the effect of different abrasives with that of the usual milling soaps it could be stated that the best results were obtained with hard, finely powdered substances such as silica or Carborundum while kaolin had almost no shrinkproofing effect.

References cited by the Patent Office are, amongst others:

Brit. P. 417,654 (I. G. Farben): suggests a fulling treatment with a mixture of soaps and glycerides. The (optional) addition of Fuller's earth, mentioned in the specification is obviously not intended for abrasive purposes. The present patent corresponds to Brit. P. 573,322 (1945).

Reference is further made to the abstracts in the AMERICAN DYESTUFF REPORTER to U. S. Pat. 2,418,071 (1947) and U. S. Pat. 2,434,562 (Milton Harris).

Speakman's first contributions to this problem in the field of patents were Brit. P. 453,700, 453,701, and 456,336. The method of setting the wool fibers consisted here of a bisulfite treatment.

Bleaching Pretreatment With Ethanolamine—Ozone Bleaching B, 2

U. S. Pat. 2,438,100
(Chemical Labor. Inc., Whitner, March 16, 1948)

It has been observed that fibers, impregnated with mono-, di or triethanolamine solutions and thereupon treated with ozone are substantially bleached (decolorized). This bleaching effect may result from an increased adsorption. The effect is partly accompanied by an increased affinity to dyestuffs. Ozonized air, used in this process, may be produced in different ways as for instance by the action of a spark discharge or by ultraviolet radiation. The fabrics are well scoured, optionally prebleached with hypochlorite, and thereupon soaked, for instance, in a 5% triethanolamine solution. The excess of this solution is removed by squeezing and the fabric is placed in a container through which ozonized air is passed for about 20 minutes.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,189,918 (Celanese): describes increasing the affinity of cellulosic materials *to dyes* by a pre-treatment with amines such as methylamine, ethylene diamine, also ethanolamine.

U. S. Pat. 2,096,400 (Kritchevsky): suggests bleaching wood after contacting the material first with an organic base (also ethanolamine) and thereupon with peroxide.

U. S. Pat. 1,934,956 (Wait): the affinity of a fabric in dyeing or printing processes is increased by applying ozone in form of a liquid saturated with ozonized air.

Other references: A bleaching process, consisting of kiering fabrics under pressure in a liquid containing caustic and ricinoleates and bleaching with ozonized air has been described in U. S. Pat. 1,823,-352 (Crespi). This patent is very similar to Swiss patent 146,241 (Hoffman) which suggests treating linen goods in a closed vessel with ozone, produced by spark discharge. Ger. Pat. 592,933 (Mueller) recommends bleaching with a mixture of ozone and nitrogen dioxide.

Hypochlorite Solutions, Stabilized With Aromatic Sulfonamides B, 5

U. S. Pat. 2,438,781
(Boyle-Midway-Kamlet, March 30, 1948)

It is well known that aqueous solutions of hypochlorite are unstable. Hypochlorous acid is a very weak acid which is displaced from its salts even by the atmospheric carbon dioxide: As soon as a trace of free hypochlorous acid appears in the solution it undergoes a dismutation: $3\ HOCl \longrightarrow HClO_3 + 2\ HCl$, thus being transformed into chloric and hydrochloric acid. This dismutation continues until the entire solution is decomposed. Different means for stabilizing hypochlorites are enumerated in the present specification, for instance, free alkalis, calcium hydroxide, sodium silicate, borax, also alcohol or acetone. None of these stabilizers has proved entirely satisfactory. In all cases the solutions will deteriorate in the open air as soon as the pH value drops under 10. The inventor solved this problem by stabilizing the hypochlorite solutions with *substances of the aromatic sulfonamide type* such as benzene sulfonamide, p-toluene-sulfonamide or benzene- N- sodium sulfonamide:

which proved to have the best effect. In the event of a contamination of the liquid by carbon dioxide the acid will first form the free base $C_6H_5SO_2NH_2$ and the next equivalents of acid will give a monosubstitution product: . . . - SO_2 N<Na/Cl and finally . . . - SO_2 $N(Cl)_2$, i.e., dichlorosulfonamide. This latter product is highly stable and *insoluble.* Thus all of the free HOCl is removed from the solution and transformed in an insoluble compound which floats in a thin layer on top of the hypochlorite liquid, barring further access of CO_2 to the solution. An example is given: 250 g. benzene sulfonamide dissolved in 90 l. NaOH (12.6%). 10.0 kg. chlorine gas is passed through this solution. The temperature is kept at 20° C. A stabilized hypochlorite solution is obtained.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,263,948 (Economics Labor.): chloramides are used as germicides.

U. S. Pat. 1,894,539 (Heyden, Mirau): the "dichloroamines", for instance toluene sulfodichloramine, are used as such as chlorine evolving disinfectants in alkaline solutions.

U. S. Pat. 1,890,603 (Heyden, Feibelmann): recommends stable bleaching agents consisting of a dry mixture of dichlorides of aromatic sulfonamides (toluene-sulfodichloramides) and a water soluble salt of alkaline reaction such as calcinated soda ash).

Carroting Furs—Nitrates of Radioactive Metals Added to Peroxide-Sulfuric Acid A, 2, 03

U. S. Pat. 2,438,738
(Trinity Holding Corp., Bowles-Keegel, March 30, 1948)

Carroting furs has been carried out for a long time almost exclusively with the rather poisonous mercury nitrate solutions. The trend in the last 15-20 years was to replace these heavy metal solutions by oxidizing and strongly hydrolyzed liquids such as persalts or hydrogen peroxide containing mineral acids. (See references below). The present invention belonging to the same group suggests to use mildly hydrolyzing agents which are able to attack the amino-acid-salt bridge of the cystine portion of the fibers and to form by the reduction of the disulfides a *di-mercaptane* group (similarly as in former shrinkproofing processes). It has been found that felting properties of the hair (rabbit, hares, muskrats, beavers, etc.) are greatly increased by introducing into the acid oxidizing, solution, as mentioned above, a *mixture of*

nitrates of *two radioactive* metals (uranium, thorium) and *one non active metal* (strontium). The proportion of these three metal components may vary under the condition that the sum of the average atomic weight is about 200. An example illustrates this condition: 50% U (at. weight 238), 25% Th (at. weight 232), 25% Sr. (at. weight 87) .. sum 199. The total amount of the radioactive elements is so small that no danger for the health of the operators has to be apprehended. A carroting solution consists of the metal nitrates and furthermore of potassium nitrate, glacial acetic acid (as a reaction retarding agent) and relatively small amounts of the hydrolyzing mineral acids. The result is said to be a soft, slightly cream colored felt, consisting of fibers of considerable tensile strength.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,309,254 (Page): refers to a carroting composition, containing zinc sulfate, acetic acid, tannin, nitric and sulfuric acid and water.

U. S. Pat. 2,144,487 (Non Mercuric Carrot Co.): suggests to add to a standard mercury-free carroting solution of hydrogen peroxide and mineral acids some organic dyestuffs (anthraquinone, triphenylmethane) as protecting agents for the natural pigments.

U. S. Pat. 2,079,860 (Buffalo Electr.): the carroting solutions contain mercury nitrate, hydroxylamine and nitric acid.

U. S. Pat. 2,048,645 (Non Mercuric Carrot Co.): describes one of the standard mercury-free carroting solutions containing an acid hydrolyzing and an oxidizing agent and moreover a considerable quantity of soluble neutral salts to prevent undue attack by the strong mineral acids.

Other Reference: metal salts which are explicitly termed as *non oxygen*-carriers (for instance aluminum salts) are added to carroting solutions according to Austrian Patent 150,492 (Polgar).

Natural Silk—Throwing with Non-alkaline Solutions

A, 2, 02

U. S. Pat. 2,439,221
(Institute of Paper Chemistry, Rowland-Fronmuller, April 6, 1948)

Up to now pretreatments of natural raw silk have mostly been carried out in alkaline baths. The specification mentions especially the throwing baths used for loosening up and softening the single strands of raw silk so that the material can be wound up unto a reel prior to twisting and coning. The fiber quality is impaired by a prolonged contact with the alkaline liquids. The present invention proposes instead to use throwing baths having a pH between 3 to 5.8 and preferably of 3.45. The tensile strength of the fibers is definitely improved by this treatment and knitted goods manufactured from the thus treated silk yarns are said to be particularly form fitting. The throwing baths, protected by the present patent, are composed from a softening oil such as mineral oil, coconut oil or the like and of an acid type emulsifier, especially monoglyceryl lauryl sulfate, thus a solubilized monoglyceride. Penetrating agents (alkylsulfates) and lecithin can be added as well. The characteristic feature of this invention is that non-alkaline oil emulsions are used which consequently do not damage the animal fibers. It has to be considered as a further advantage that the oily emulsion is absorbed with a far greater speed. Temperatures of 80° C. and soaking times between 10-30 minutes, especially 25 minutes, are the preferred conditions.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,067,888 (Nat. Oil Prod.): recommends treating silk in an oil-in-water emulsion consisting of an insoluble wax (paraffin or montan wax), a soap of mineral oil sulfonate (mahogany soap) and a sulfonated fatty oil (sulfonated castor oil).

U. S. Pat. 2,029,969 (Wallerstein Co.): silk is degummed with special proteases (proteolytic enzymes) at a low pH of about 4 while adding soaking oils which are compatible with these enzymes.

U. S. Pat. 2, 025,989 (Kaplan): raw silk fibers are soaked in sulfonated tallow dispersions to which palm oil, waxes, olive oil, castor oil and fatty alcohols are added. Mineral oil can be omitted here.

U. S. Pat. 2,023,387 (Harris): describes the sulfonation of monoglycerides, for instance monolaurin. The products are useful surface active agents but no application of these solutions for throwing silk is mentioned in the specification.

Other references are: U. S. Pat. 1,896,494 (Myers, Stegemayer): natural silk is oiled with neutral mineral oil sulfonates emulsified with methanol. Brit. P. 477,066 (Warwick Chem. Co.): natural silk is degummed and oiled at the same time by treating it with an oil dispersion to which sodium lactate has been added. The pH drops from 9-10 to 7.

Printing Nylon with Acid and Direct Dyestuffs—Caprolactam

D, 2, 07

U. S. Pat. 2,439,745
(Du Pont, C. F. Miller, April 13, 1948)

The patent specification refers to the study of P. L. Meunier in AMER. DYEST. REP. vol. 31, p. 232-9, comprising the conventional practice of printing nylon fabrics. Besides the customary thickener, the water and the dyestuffs, special assistants have to be used, for instance urea, hydroxyacetic acid, triethanolamine or combinations of these products. Printing pastes, composed according to this formula, have the drawback of requiring a steaming operation of between 30 minutes up to an hour for fixation. The present invention suggests to replace these agents by as pecial combination of *caprolactam and an ammonium* salt of a polyvalent acid such as ammonium sulfate, phosphate or pyrophosphate. In comparison with the customary method it is now possible to fix the print within a considerably shorter time, i.e., in 6-10 minutes, thus enabling a continuous operation in a rapid ager. The inventor discloses that the chemical reaction going on in this process is obscure but it is probable that the ammonium salt decomposes slowly, liberating acid which apparently is essential for making the nylon fiber receptive towards dyes of the direct and acid type. Caprolactam on the other hand has the function of dispersing the dye in the printing paste and, at the same time, of overcoming the tendency of the mentioned ammonium salts to precipitate the dye out of the solution. A printing formula in one of the examples comprises Anthraquinone Green F (3%), caprolactam (4.5%), ammonium sulfate (4%) and the necessary water and thickener balance. The ageing time is 15 min. in a rapid ager for vat dyestuffs (Mather & Platt type). The prints are well fixed, bright and at least equal in strength to those made according to the conventional type in an ageing operation of 30 minutes or even more.

Reference cited by the Patent Office amongst others:

U. S. Pat. 1,947,107 (Durand & Huguenin): describes printing Indigosol dyestuffs according to the chlorate-vanadate formula. The patent mentions ammonium salts as customary auxiliaries for fixing this type of dyestuffs.

References: The dispersing effect of caprolactam is unexpected because this compound was mostly used up to now for undergoing self-polymerization in forming nylon-type fibers. (See for instance U. S. Pat. 2,241,322/3, Du Pont). These reactions frequently described in some of the nylon patents require high pressure and higher temperatures than those occurring in a rapid ager.

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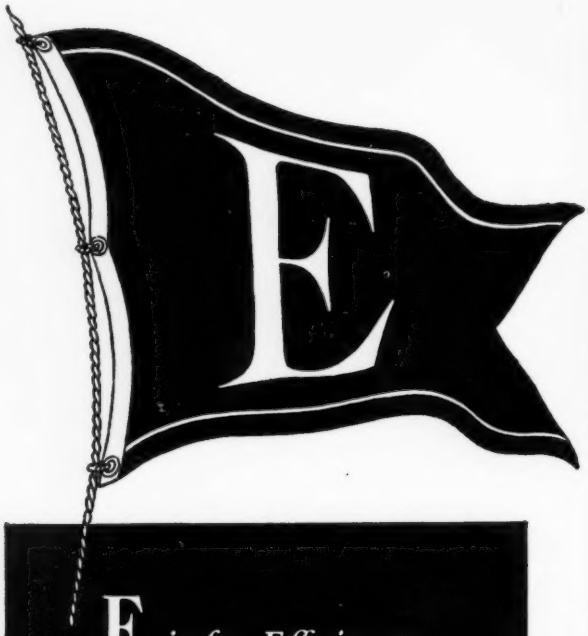

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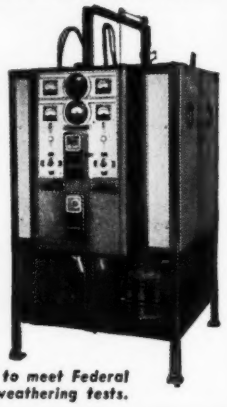

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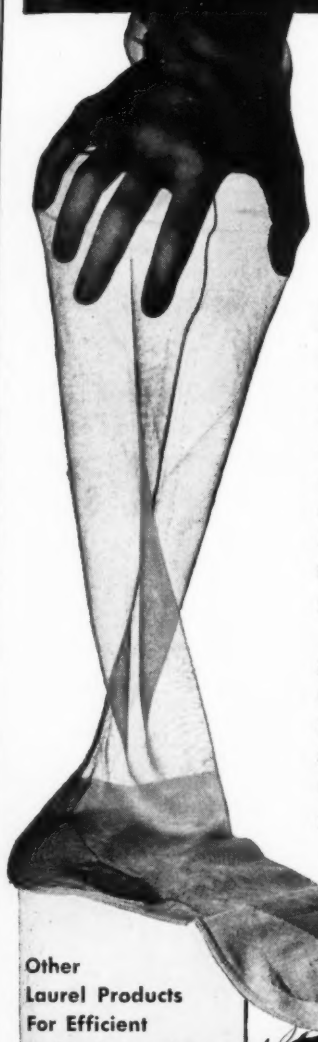

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Laurel Peramel #5 safeguards the beauty and appeal of your fine denier nylon hosiery. Laurel Peramel #5 is an efficient, non-toxic resin finish. Long lasting, it increases snag resistance, keeps pulled threads to minimum, improves the stitch and appearance of your nylons. Laurel Peramel #5 speeds your production, pleases your customers. Introduced to the textile industry in early 1940, Laurel Peramel #5 has become a "must" today with leading nylon processors.

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SYNTHETIC THICKENER FOR LATICES AND RESIN EMULSIONS

Manufacturers, compounders and consumers of natural and synthetic latices frequently ask us, "Do you have a stable, non-creaming thickener for emulsions which will give high viscosities at low concentrations?" Until recently, this perennial problem has been one of the banes of our existence. Now, we are pleased to announce the answer — POLYCO 296, an aqueous solution of the sodium salt of an acrylic acid copolymer.

SPECIFICATIONS:

Concentration	15%
Color	Slight yellow
Turbidity	Slightly cloudy
Viscosity	Over 100,000 cps. @ 25°C
pH	8-9

GENERAL PROPERTIES:

POLYCO 296 can be diluted with hot or cold water to yield solutions with higher viscosities than those obtained with most commercially available synthetic thickeners. Derived solely from synthetic materials, POLYCO 296 is not subject to the rotting, souring and mildewing commonly encountered with naturally derived gums, proteins and starches.

POLYCO 296 by itself yields tough, elastic, acid-resistant films which do not embrittle or yellow with age. Because of the small quantities of this material required for effective thickening of most latices, film properties of such latices are not significantly altered.

COMPATIBLE WITH:
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Natural Latex
Hycar Latex
Neoprene Latex
Many other Latices and Resin Dispersions

ADVANTAGES:
Heat stable — will not gel at high temperatures.
High viscosities at low concentration.
Non-oxidizing, non-yellowing, flexible films.
Non-creaming, mechanically stable compounds with latices and emulsions.
Resistant to oils, fats, greases and aliphatic solvents.
Will not support bacterial growth.

SUGGESTED USES:
1. To thicken latices for dipping, saturating and coating operations.
2. Flexible film former on paper, leather and plastic films.
3. Protective colloid for emulsions and dispersions.
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6. Vehicle for textile printing pastes

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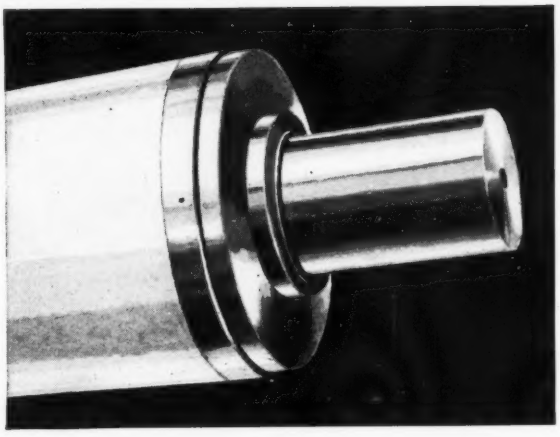

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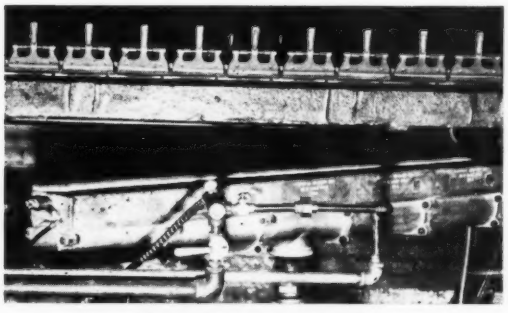

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Infra-Red speeds up production!
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Added life, like the cat's nine, is what "Star" Silicate gives your bleach baths. Stabilizing with "Star," you increase your yardage per pound of peroxide. Here's why there's added life and more bleaching mileage when you use "Star" Silicate:

Brilliant clarity with no floc to dissipate peroxide.
Stable to dilution and heat—doesn't decompose.
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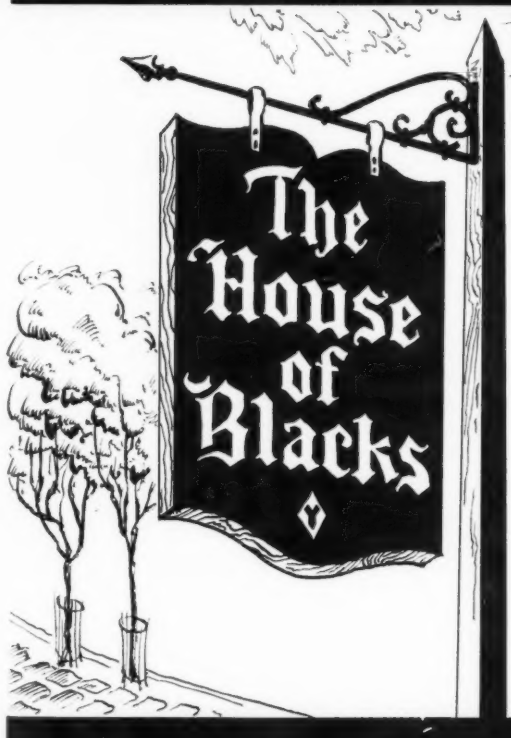

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***AQUAROL**: A water repellent for processing woolen, cotton and rayon fabrics, also produces excellent results in splashproofing or finishing all types of hosiery.

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***ARIPEL F S**: Finish and gas inhibitor for processing dyed acetate rayon—produces a soft, full feeling finish and prevents gas fading of the color.

***LANITOL F**: A synthetic detergent possessing exceptional scouring and washing properties for processing wool, cotton, rayon or nylon.

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***CULOFIX**: Used as an after treatment in last rinse to prevent bleeding of direct dyed cotton or rayon in water.

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And a complete line of Oils, Chemicals, Softeners and Finishes for Wet Processing All Textile Fibres

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Manufacturers of Industrial Chemicals for Over 40 Years

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TROUGH SOLUTION FOR KNITTING NYLON

Knitting Mill Conditions Vary Greatly
Nylon Thrown by Different Throwsters Varies

It has been necessary for us to make several types of KALPINOLS to meet these conditions.

One knitting mill has all nylon yarn from the same throwster but mill conditions are different in three sections of the mill, necessitating the use of three types of KALPINOL, each giving equally good results in the section in which it is used.

Let us help you.

•

For cleaning nylon size from your needles, sinkers, bits, etc., use K.N.K. (KALI NEEDLE KLEANER). It can be used straight or mixed with equal parts of water without separating.

•

HYDROXY HAND CREAM—for operators handling nylon, to keep their hands smooth.

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MAKES WAX AND GREASE **DISSOLVE** IN SOAP SOLUTION

CLEANS AND LEAVES FIBERS ABSORBENT

CAUSES **DYE** TO **PENETRATE EVENLY** QUICKLY

Washes away Wax for Uniform Dyeing
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Puts Soap in Contact With Dirt
Is Low In Price

In the treatment of unbleached or incompletely bleached cotton, Newport White Pine Oil readily dissolves and emulsifies the water repellent oils and waxes so that they can be washed away easily in the scouring bath.

Result: the Cellulose fibers become uniformly absorbent, rapid dyeing becomes easy.

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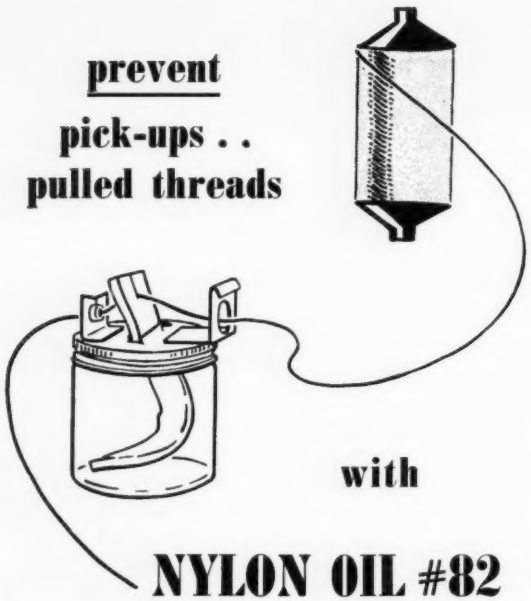
prevent

pick-ups . .
pulled threads



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NYLON OIL #82

Help yourself to better production. Nylon Oil No. 82 keeps seconds or irregulars down to as little as 2% in running 10, 15 and 20 denier nylon. Specially blended to overcome the effects of dyeing and pre-boarding. Used straight, not in an emulsion with water or other products. If you'd like to test this new oil under operating conditions, we'll gladly send you a sample. Write today.

Available in quantity, the oil cup illustrated here can be used on full fashioned or seamless hosiery machines.

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Oils for all textile conditioning requirements.

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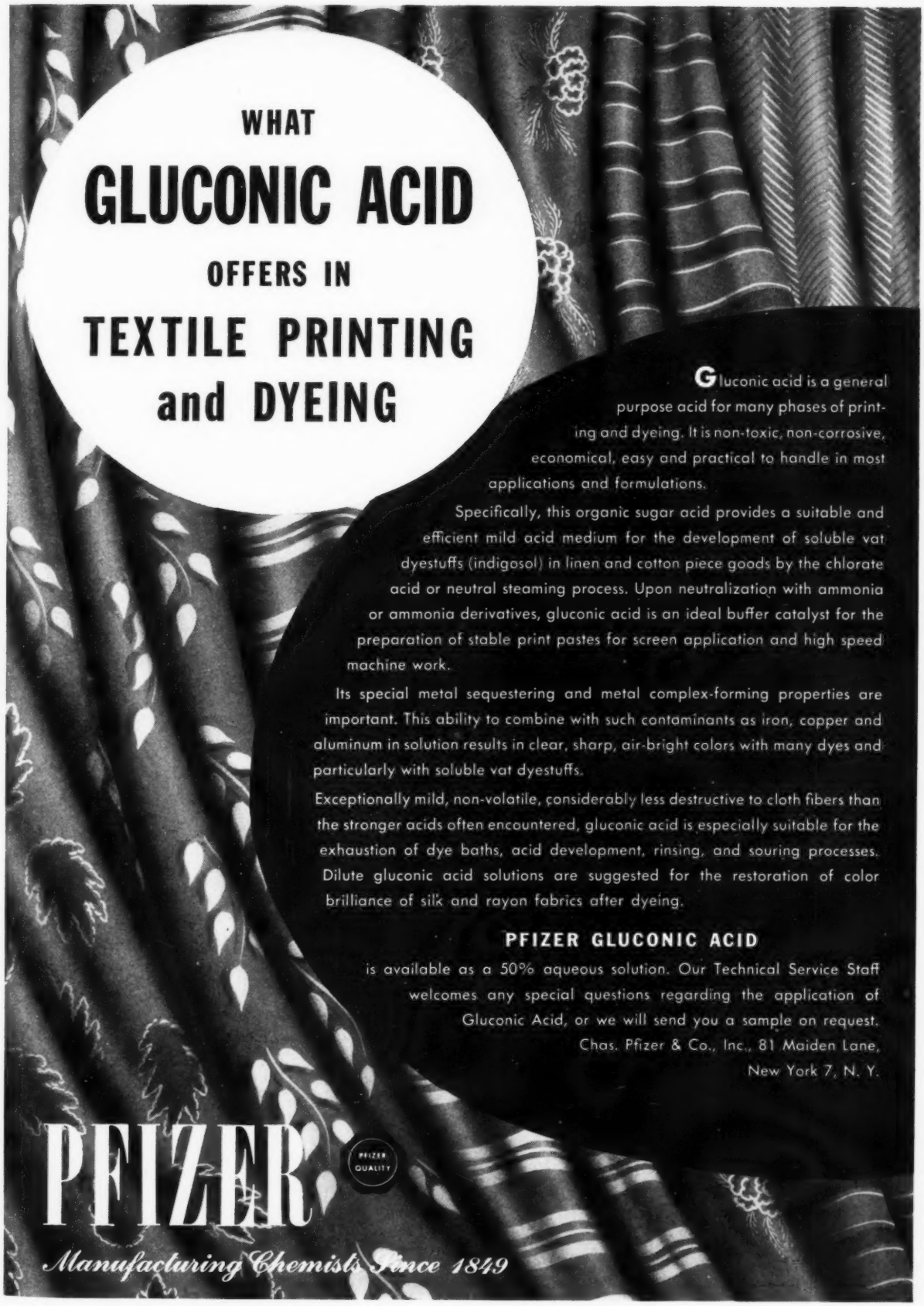
Cable Address
"ELRONA"


WHAT
GLUCONIC ACID
OFFERS IN
TEXTILE PRINTING
and DYEING
Gluconic acid is a general purpose acid for many phases of printing and dyeing. It is non-toxic, non-corrosive, economical, easy and practical to handle in most applications and formulations.
Specifically, this organic sugar acid provides a suitable and efficient mild acid medium for the development of soluble vat dyestuffs (indigosol) in linen and cotton piece goods by the chlorate acid or neutral steaming process. Upon neutralization with ammonia or ammonia derivatives, gluconic acid is an ideal buffer catalyst for the preparation of stable print pastes for screen application and high speed machine work.
Its special metal sequestering and metal complex-forming properties are important. This ability to combine with such contaminants as iron, copper and aluminum in solution results in clear, sharp, air-bright colors with many dyes and particularly with soluble vat dyestuffs.
Exceptionally mild, non-volatile, considerably less destructive to cloth fibers than the stronger acids often encountered, gluconic acid is especially suitable for the exhaustion of dye baths, acid development, rinsing, and souring processes. Dilute gluconic acid solutions are suggested for the restoration of color brilliance of silk and rayon fabrics after dyeing.
PFIZER GLUCONIC ACID
is available as a 50% aqueous solution. Our Technical Service Staff welcomes any special questions regarding the application of Gluconic Acid, or we will send you a sample on request.
Chas. Pfizer & Co., Inc., 81 Maiden Lane, New York 7, N. Y.
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Consistent Clearness of Gum

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SUPERIOR TEXTILE GUMS . . .

FABRITEX: an outstanding heavier printing gum for both screen and roller printing . . . achieves superior results on an unusually wide variety of textile fabrics.

GUMOLITE: for the most discriminating who desire truly striking white effects in discharge printing.

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MANUFACTURERS OF NEOZYME* • PAROLITE* • DISCOLITE* • DRYTEX*
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When you think of textile printing . . . remember FABRITEX . . . remember GUMOLITE . . . superior textile gums . . . product of Royce Chemical Company.

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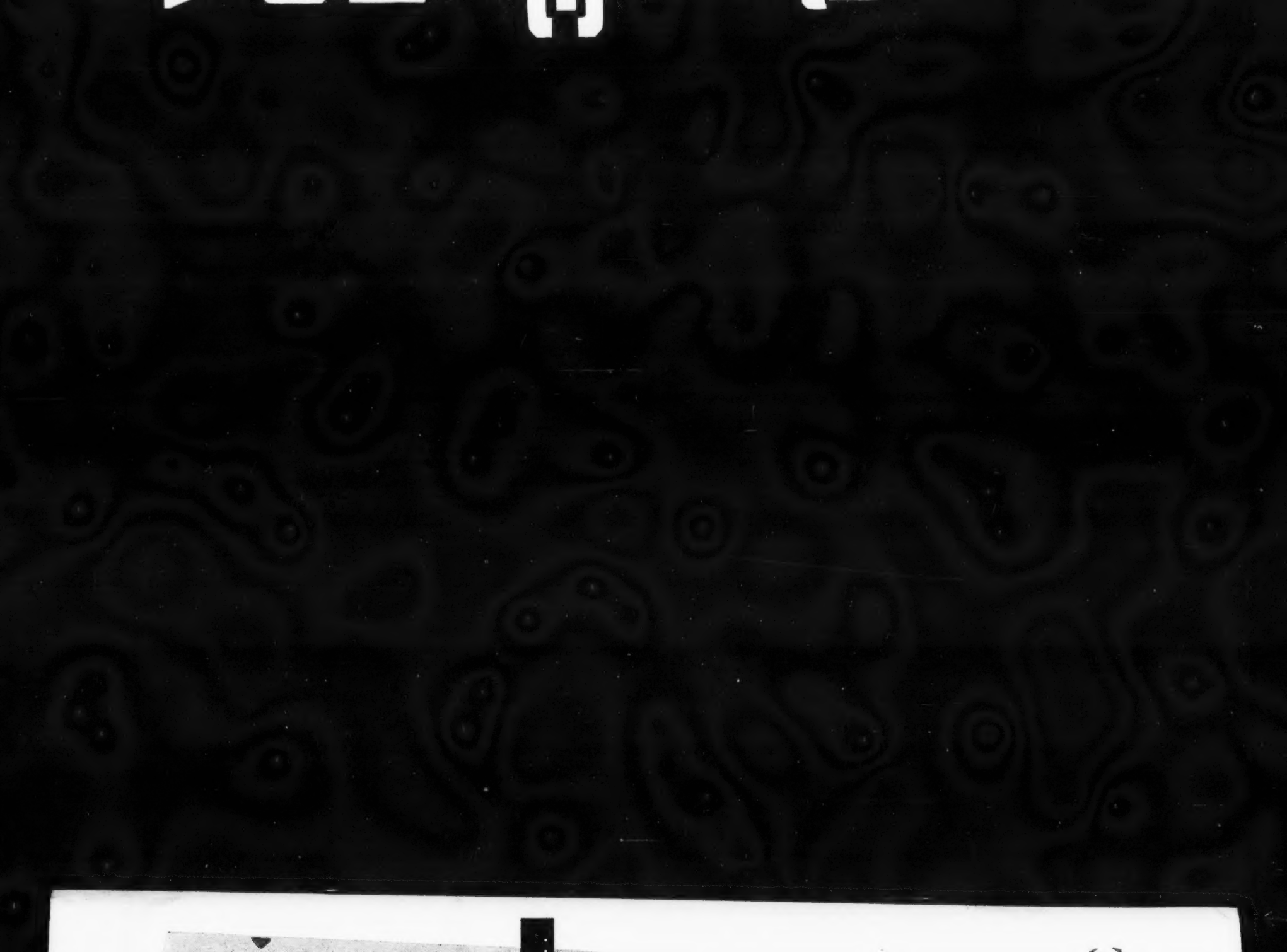
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